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Municipal Sanitary Authority of the City of New Kensington

Industrial Pretreatment Program

Headworks Analysis For Local Limits Reevaluation

October 2012

City of New Kensington, Westmoreland County, PA

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MUNICIPAL SANITARY AUTHORITY OF THE CITY OF NEW KENSINGTON
NPDES PERMIT NO. PA0027111
HEADWORKS ANALYSIS FOR LOCAL LIMITS REEVALUATION

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1.0 INTRODUCTION

1.1 Pretreatment Program Background

The U.S. Environmental Protection Agency's (USEPA) General Pretreatment Regulations require local limits for Publicly Owned Treatment Works (POTWs) that implement federally approved pretreatment programs and for any other POTWs that are experiencing recurring pass through and interference problems.

Under the USEPA's local limits policy, each POTW must assess all of its industrial discharges and employ sound technical procedures to develop defensible local limits that will assure the POTW, its personnel, and the environment are adequately protected. The elements of an assessment include identifying all industrial users, determining the character and volume of pollutants in their discharge, and identifying pollutants of concern through a sampling, monitoring and analysis program. For each pollutant of concern, the POTW must then determine the Maximum Allowable Headworks Loading and implement appropriate local limits to ensure that the maximum loadings are not exceeded. The specific technical approach and method of control are left to the judgment of the POTW.

With respect to national standards for pretreatment, there are two sets of standards, namely Prohibited Discharge Standards and Categorical Pretreatment Standards. Prohibited Discharge Standards prohibit the discharge of wastewater that would pass through or interfere with POTW operation including sludge management. These are the general prohibitions. There are also specific prohibitions that prohibit the discharge from all non-domestic sources of certain types of wastewater that 1) are a fire or explosion hazard in the collection system or treatment plant 2) are corrosive, including any discharge with a pH less than 5.0 s.u., unless the POTW is specifically designed to handle such wastes, 3) contain solid or viscous pollutants in amounts that will obstruct the flow in the collection system or treatment plant, resulting in interference with operation, 4) contain pollutants in quantities sufficient to interfere with POTW operation and 5) have a temperature above 104 degrees F (40 degrees C) when reaching the treatment plant, or hot enough to interfere with biological operations.

Categorical pretreatment standards are technology-based limitations on industrial discharges to POTWs promulgated by EPA in accordance with Section 307 of the Clean Water Act. Categorical pretreatment standards apply to specified process wastewaters generated by particular industrial categories.

Local limits supplement the Prohibited Discharge Standards and Categorical Pretreatment Standards. Local limits are necessary in cases where an industry is not covered by categorical standards, or where categorical standards are not adequate to protect the POTW or receiving stream or to prevent undue contamination of the POTW sludge. Local limits are needed to implement three fundamental objectives of the National Pretreatment Program:

1. Prevent the introduction of pollutants into the POTW that could interfere with its operation,

2. Prevent pass-through of untreated pollutants that could violate applicable water quality standards or National Pollutant Discharge Elimination System (NPDES) effluent limitations,

3. Prevent the contamination of POTW sludge that would limit the selected sludge uses or disposal practices.

The term Pretreatment refers to the requirement for non-domestic sources that discharge wastewater to POTWs to control their discharges in order to meet limits established by EPA, the state or local authority on the amount of pollutants allowed to be discharged. The control of the pollutants may necessitate treatment prior to discharge to the POTW. Limits may be met by the non-domestic source through pollution prevention techniques or treatment of the wastewater.

1.2 Purpose and Scope of Local Limitations Re-Evaluation

The Industrial Pretreatment Program of the Municipal Sanitary Authority of the City of New Kensington (MSANK) was developed in 1993 and approved by the USEPA in 1994. The Pennsylvania Department of Environmental Protection (PaDEP) issued renewal NPDES Permit PA0027111 to MSANK on June 24, 2012. This permit is effective from July 1, 2010 to June 30, 2015. The purpose of this Headworks Analysis for Local Limits Reevaluation report is to address requirements in Part C, Item D of the NPDES permit, which requires MSANK to submit a reevaluation of their system to the USEPA and the PaDEP based on a Headworks Analysis of its treatment plant.

The scope of the Headworks Analysis for Local Limits Reevaluation included the following tasks:

1. Identification of all regulated industrial and commercial users with discharges that potentially could have an effect on the MSANK treatment plant processes.

2. Conducting a Headworks Analysis sampling program over a five-day period. The sampling program involved collecting 24-hour composite and grab samples of treatment plant Influent, Effluent, Digester Influent, Background sources and treatment plant Sludge.

3. Evaluation of the results of the Headworks Analysis sampling program to determine allowable amounts of priority pollutants at the MSANK treatment plant.

4. Calculation of revised local limits for the industrial users based on the allowable amounts of priority pollutants at the treatment plant.

5. Evaluation of the potential impact of the revised local limits on the MSANK pretreatment program.

2.0 WASTEWATER TREATMENT PLANT PROCESSES

MSANK is responsible for the operation and maintenance of a sewage treatment plant rated at 6.0 MGD, approximately 63.1 miles of collector and interceptor sewers, six (6) combined sewer overflows (CSO's), and three pump stations in the City of New Kensington. MSANK also provides treatment and conveyance service to the City of Arnold which has 15 miles of collector sewers, two (2) CSO's and one pump station; the City of Lower Burrell which has 67.2 miles of collector sewers and eleven (11) sewage pump stations; and the Logans Ferry Heights section of Plum Borough with 5 miles of collector sewers. The MSANK treatment plant is located at 120 Logans Ferry Road, in New Kensington, Westmoreland County and operated by MSANK under Sewerage Permit Nos. 9079 - S, 9220 - S and 6572405 and NPDES Permit No. PA0027111. The Service Area Location Map is shown on **Figure 1.**

2.1 Wastewater Treatment Plant

The MSANK sewage treatment plant is an activated sludge plant designed to treat an average daily flow of 6.0 MGD. The treatment plant discharges treated wastewater into Pucketa Creek, approximately 200 feet upstream of its confluence with the Allegheny River. Wastewater flow is continuously measured using a magnetic flow meter located along the force main between the influent wastewater pump station and the grit removal facilities. A schematic of the treatment plant is provided as **Figure 2.**

2.2 Primary Treatment Processes

Preliminary and primary treatment processes at the MSANK treatment plant include grinding via a comminutor, grit removal, pre-aeration and sedimentation. The purpose of the primary treatment process is to reduce the organic loading to the secondary treatment processes.

2.3 Secondary Treatment Processes

Secondary treatment processes consist of activated sludge extended aeration followed by clarification. The purpose of the secondary treatment process is to removal organic material through biological treatment. The treated effluent is disinfected prior to discharge to the receiving stream. Chlorine gas is used as the disinfecting agent.

2.4 Sludge Handling Processes

Sludge handling activities consist of dissolved air flotation thickening, anaerobic digestion, and dewatering by a belt filter press. The sludge generated at the treatment plant consists of two types of sludge. Primary sludge is removed from the primary clarifiers and decanted in the primary sludge decant tank. The thickened sludge is then pumped to the anaerobic digesters for stabilization.

Secondary sludge is removed from the final clarifiers and thickened in the dissolved air flotation thickener unit prior to being pumped to the anaerobic digesters. Stabilized sludge from the anaerobic digesters is dewatered on a belt filter press, prior to landfill disposal.

2.5 Recent Wastewater Treatment Plant Modifications

The Headworks and Blower Building Project was substantially complete in 2010. The project resulted in improved process control and safer working conditions at the flow point of entry to the plant and with the relocation of secondary aeration blowers along with associated electrical power components to a new building located above the 100-year floodplain.

3.0 WASTEWATER TREATMENT PLANT PERFORMANCE

3.1 NPDES Permit Requirements

The routine monitoring performed at the MSANK sewage treatment plant is conducted in accordance with the NPDES permit requirements. The parameters currently being monitored along with the frequency of analysis and types of samples are indicated below:

MSANK Sewage Treatment Plant
NPDES Permit Monitoring Requirements

Parameter	Frequency	Sample Type
Total Flow	Continuous, Recorded	24 hour composite on influent and effluent
$CBOD_5$	Daily	
Suspended Solids	Daily	24 hour composite on influent and effluent
Fecal Coliform	Daily	Grab on the effluent
pH	Daily	Grab on the effluent
Chlorine Residual	Daily	Grab on the effluent

Parameter	Average Daily Limitation	Maximum Weekly Limitation
Total Flow	-	-
$CBOD_5$	25 mg/l / 1251 lb/day	37.5 mg/l/ 1877 lb/day
Suspended Solids	30 mg/l / 1501 lb/day	45 mg/l / 2252 lb/day
Fecal Coliform	200* / 2000 *May 1 – September 30	-
pH	6.0-9.0 s.u.	-
Chlorine Residual	1.0 mg/l	-

The operating performance of the MSANK treatment plant was evaluated through a review of analytical data obtained from the collection of samples for NPDES permit requirements. A summary of the MSANK Monthly Performance Summary for 2011 is included as **Table 1.** The MSANK treatment plant discharge was in compliance with the permit limitations consistently throughout 2011, except for exceedances of the CBOD and TSS monthly average and maximum weekly averages during March and exceedance of the CBOD monthly average limit in April.

3.2 Local Limits Monitoring Requirements

In accordance with the requirements of the Industrial Pretreatment Program, MSANK conducts influent, effluent and sludge sampling and analysis for the existing local limit parameters on a quarterly basis. A summary of the analytical results from the local limit monitoring conducted during 2011 is included as **Table 2.**

4.0 INDUSTRIAL USER INFORMATION

4.1 Definition of Industrial User

The MSANK Pretreatment Resolution defines an Industrial User as "a source of Indirect Discharge". An Indirect Discharge is defined as "the introduction of pollutants into the sewage treatment plant from any non-domestic source regulated under Section 307(b), (c), or (d) of the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251, et. seq." Under the resolution, a Significant Industrial User (SIU) of the wastewater disposal system of MSANK is defined as:

(a) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and

(b) Any other industrial user that:

1. Discharges an average of 25,000 gallons per average work day or more of process wastewater to the POTW, (excluding sanitary, non-contact cooling and boiler blowdown waste), or

2. Contributes a process wastewater which makes up five percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant, or

3. Has in their wastewater toxic pollutants as defined pursuant to Section 307 of the Act of (State) statutes and rules, or

4. Is found by the City of New Kensington, Municipal Sanitary Authority of the City of New Kensington, state control agency or the USEPA to have significant impact, either singly or in combination with other contributing industries, on the wastewater treatment system, the quality of sludge, the system's effluent quality or air emission generated by the steam, or

5. Is designated as such by the Control Authority on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any Pretreatment Standard or requirements in accordance with 40 CFR 403.8(f)(6).

Upon finding that an industrial user meeting the criteria in Paragraph A of this section has no reasonable potential for adversely affecting the POTWs operation or for violating any pretreatment standard or requirement, the control authority may at any time, on its own initiative or in response to a petition received from an Industrial User, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a Significant Industrial User unless the industrial user is classified as a Categorical industrial user.

4.2 Classification of Industrial Users Regulated Under the MSANK Pretreatment Program

During 2011, there were six (6) Significant Industrial Users permitted under the MSANK pretreatment program and one hundred and seventy one (171) commercial/industrial facilities included in the program.

A listing of the Significant Industrial Users currently regulated under the pretreatment program is included in **Table 3.**

A. Significant Industrial Users

During 2011, three Significant Industrial Users were located in the City of New Kensington including Citizens Ambulatory Care Center, Schreiber Industrial Development Company and Unifirst Corporation. Three Significant Industrial Users were located in the City of Arnold including Keystone Rustproofing, Inc., Castle Co-Packing and Farmland Foods. The City of Lower Burrell does not have any industrial facilities, however, a variety of commercial dischargers from this portion of the service area are regulated under the pretreatment program. Plum Borough has no industrial and no commercial dischargers permitted under the pretreatment program.

B. Categorical Significant Industrial Users

There was one (1) categorical SIU permitted under the Pretreatment Program during 2011. The categorical SIU was Keystone Rustproofing. Keystone Rustproofing is regulated under 40 CFR Part 413-Electroplating Subcategory and 40 CFR 433.17(a) Metal Finishing.

The address for this facility is as follow:

Keystone Rustproofing, Inc.
1901 Dr. Thomas Blvd.
Arnold, PA 15068

C. Non-categorical Significant Industrial Users

There were five (5) non-categorical SIUs permitted under the Pretreatment Program during 2003. These SIUs included Citizens Ambulatory Care Center, Farmland Foods, Schreiber Industrial Development Company, Castle Co-Packing Company, and Unifirst Corporation. Addresses for these facilities are as follow:

1. Citizens Ambulatory Care Center/
   Alle-Kiski Medical Center
   651 Fourth Avenue
   New Kensington, PA 15068

2. Farmland Foods
   2200 Rivers Edge Drive
   Arnold, PA 15068

3. Schreiber Industrial Development Company
   P.O. Box 691
   New Kensington, PA 15068

4. Castle Co-Packing
   Building 204-B
   Schreiber Industrial District
   Arnold, PA 15068

5. Unifirst Corporation
   1150 Second Avenue
   New Kensington, PA 15068

D. Non-Significant Industrial Users

There were a total of one hundred seventy one (171) non-significant industrial/commercial users regulated under the pretreatment program during 2011. These users consist primarily of restaurants, automotive care facilities, and other commercial establishments that discharge wastewater with the potential to affect the performance of the MSANK treatment plant.

4.3 Industrial User Flow Data

The flows for the Significant Industrial Users are based on either discharge flow meter readings or water meter readings reported to MSANK by the user.

5.0 EXISTING LOCAL LIMITATIONS

5.1 Basis of Existing Local Limitations

The existing local limitations for the pretreatment program were developed in 2005. The Significant Industrial Users were the same as the present except for changes in ownership. North Side Foods became Farmland Foods and Three Rivers Bottling Company became Castle Co-Packers.

6.0 CRITERIA FOR DEVELOPMENT OF REVISED LOCAL LIMITATIONS

6.1 Basis for Development of Revised Local Limitations

The methodology used to develop revised local limits for MSANK was consistent with the methodology recommended by the USEPA in the following:

> Guidance Manual on the Development and Implementation for Local Discharge Limitations under the Pretreatment Program, USEPA, Office of Water Enforcement and Permits, Washington, D.C., December 1987
>
> Local Limits Development Guidance, USEPA, Office of Wastewater Management 4203, EPA 833-R-04-002, July 2004

These documents are referenced throughout this study as USEPA Guidance Manual.

6.2 Headworks Analysis Sampling Plan

MSANK developed a Headworks Analysis Sampling Plan that was approved by USEPA on September 11, 2011. A copy of the sampling plan and the approval letter are included in **Appendix A**. The Headworks Analysis Plan was implemented as described below.

A. Pollutants Evaluated

MSANK evaluated a total of eighteen (18) parameters as part of the Headworks Analysis. The Headworks Analysis evaluation consisted of the "standard ten" parameters including Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Silver and Zinc. Molybdenum and Selenium were also evaluated due to their inclusion in both EPA's and Pennsylvania's sludge quality programs. The other parameters for which MSANK currently has local limits also were evaluated including: Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), Total Suspended Solids (TSS), Oil and Grease, and pH.

No additional toxic pollutants are included in the NPDES permit, nor have any other priority pollutants been detected at significant levels during the priority pollutant scans conducted as part of the quarterly monitoring required by the Pretreatment Program.

B. Sampling Points

MSANK utilized five sampling locations to conduct the Headworks Analysis. The sampling locations were:

1. Raw Influent
2. Influent to Digester
3. Final Effluent
4. Background samples solely from domestic sources
5. Dewatered Sludge

C. Number and Type of Sampling Events

1. Historical Sample Data

MSANK used historical monitoring data to supplement the samples collected for the Headworks Analysis. The use of historical data from 2006 through 2011 was used in the headworks analysis spreadsheet.

2. Sample Data

In order to assess current plant conditions, MSANK conducted sampling on a daily basis for a five-day period. Grab samples were collected for Cyanide, Oil and Grease. Temperature and pH were evaluated through on-site testing procedures. All other parameters were evaluated using 24-hour composite samples. Sample data included the following:

a. Raw Influent and Final Effluent

Five, 24-hour composite samples of the Raw Influent and Final Effluent samples were collected for analysis. These samples were analyzed for the twenty-two parameters referenced previously.

b. Influent to Digester

A total of five daily grab samples of Influent to Digester were collected and analyzed for the non-conservative parameter of Cyanide.

c. Background

Five, 24-hour composite samples of Background wastewater from domestic sources were analyzed for the parameters referenced previously. Two samples were collected from a background sampling location in New Kensington, and three samples were collected from a background sampling location in Arnold. Background sampling in the City of New Kensington was conducted at the intersection of McCargo Street (Manhole #51). Background sampling in the City of Arnold was conducted along Moore Street.

d. Sludge

Five samples of dewatered sludge were collected from the belt filter press area at the treatment plant. Sludge samples were collected on days when the Influent and Effluent samples were being collected.

D. Analytical Methods

A listing of the parameters and the analytical methods are as follows:

Parameter	Analytical Method	Parameter	Analytical Method
Arsenic	SW-846	Total Suspended Solids	SM-2540D
Cadmium	E-200.8EPA 213.2		
Chromium	E-200.8EPA 200.7	Oil and Grease	EPA 1664A
Copper	EPA 200.7	pH	SM-4500
Cyanide	SM-4500		
Lead	EPA-200.7	Mercury	EPA-245.1
Nickel	E-200.8	Silver	SW-846
		Carbonaceous Biochemical	SM 5210B
Zinc	SW-846	Oxygen Demand	
Molybdenum	SW-846	Temperature	Field Measure
Selenium	SW-846		

6.3 Pretreatment Limitations Spreadsheet

Revised local limits for the parameters were developed using the USEPA Pretreatment Limitations Spreadsheet, in conjunction with USEPA's available guidance documents. The spreadsheet first calculates a maximum allowable headworks loading (MAHL) for each parameter by evaluating several different criteria and selecting the one that results in the most stringent allowable loading. The criteria evaluated by the spreadsheet include NPDES effluent limits, water quality criteria, and sludge disposal criteria which are inputs to the spreadsheet. The calculation is based on the criteria and the associated removal efficiency for each parameter.

Once the maximum allowable headworks loading is calculated, the spreadsheet determines the maximum allowable industrial loading, which is the portion of the allowable headworks loading allocated for industrial dischargers. This is done by accounting for both a user-specified safety/expansion factor and the current loadings from uncontrolled (non-industrial) sources.

The maximum allowable industrial loading can then be allocated to the industrial discharges via several different approaches. In the case of MSANK, the allocation was done based on the Uniform Concentration Limit approach. This approach involves dividing the maximum allowable industrial loadings by the total industrial flow to calculate concentration limits, which are then applied uniformly to all industrial dischargers.

The specific inputs used in the spreadsheet and the resulting outputs are described below. A CD and a copy of the printouts from the spreadsheet used to generate the local limits for MSANK are included in **Appendix B.** The printouts include a summary of the input values as well as the calculation results.

6.4 Spreadsheet Input Data

A. Wastewater Unit Operations & Effluent Disposal

The following major elements of MSANK's treatment process were identified in the spreadsheet:

* Primary Clarification,
* Activated Sludge,
* Anaerobic Digestion, and
* Discharge to fresh water stream.

These inputs allow the model to determine applicable criteria.

B. Plant Flow Information

The spreadsheet requires four average daily flow values: the total influent flow, the influent flow received from industrial contributors, the non-industrial influent flow, and the flow of sludge to the digesters.

Historical flow data from 2006-2011 was used to determine the influent flow. The average total daily influent flow was 6.001 MGD. The current NPDES permit allows for an average daily flow of 6.0 MGD. Flows exceeding this amount are due to the combined nature of the sewage system. Heavy rains will elevate flows but also dilute contaminants minimizing their effect on the plant's discharge.

The average daily Industrial Flow value used in the model was the sum of the average discharge flows from both the significant and non-significant industrial users based on MSANK flow records for 2011. The average flow from the SIUs totaled 0.54 MGD, while the flows from the non-significant industrial users were estimated at 0.048 MGD. Based on these flow amounts, the total Industrial Flow used in the spreadsheet was 0.588 MGD and the total Non-Industrial flow was 5.413 MGD.

The Sludge to Digester flow rate was based on data collected during the month proceeding the five day sample collection. An average sludge to digester flow rate of 0.037 MGD was used in spreadsheet.

C. Receiving Water Flows

Although the facility discharges to Pucketa Creek, the PADEP considers it a direct discharge to the Allegheny River from a water quality standpoint because of the close proximity of the discharge to the river. Thus, the Allegheny River was considered the receiving stream for purposes of calculating revised local limits for the POTW.

The spreadsheet requires a receiving water dilution ratio based on the 7Q10 flow rate of the receiving stream. The flow rates used for the Allegheny River included a 7Q10 of 1,874 MGD (2,900 cfs) and a Harmonic Mean Stream Flow of 5,099 minutes. These receiving water flow rates are consistent with those used to develop the existing local limits. It was assumed that, in both cases, 100% of the receiving water flow is available for dilution. A

Complete Mix Time of 2,779 minutes and an average discharge flow of 6.001 MGD were inputs to the spreadsheet.

D. Sludge Disposal

Dewatered sludge (filter cake) from the facility currently is disposed in a landfill. However, for purposes of calculating the revised local limits and in accordance with EPA guidance documents, exceptional quality sludge criteria were used in the calculation of the updated local limits. The sludge disposal rate input into the spreadsheet was based on the total quantity of dewatered sludge generated in the year 2011, which was 366 dry metric tons or 1 dry metric ton per day.

E. Average Influent Concentrations

The spreadsheet uses average influent concentrations in order to provide a comparison of the calculated maximum allowable loadings to the actual influent loadings. The average influent concentrations were based on the 5 days of influent data collected as part of the Headworks Analysis Sampling Plan and the quarterly data collected from years 2006-2011. When calculating the averages, measurements reported as non-detectable were assumed to be equal to one half of the detection limit.

F. Average Non-Industrial Concentrations

The average non-industrial concentrations for all parameters were based on the 5 days of "background" sampling data collected as part of the Headworks Analysis Sampling Plan. The "background" samples were collected from residential sections of the MSANK service area at points with no known contribution of flow from commercial or industrial dischargers. Measurements reported as non-detectable were assumed equal to one half of the detection limit.

G. NPDES Effluent Limits

Effluent discharge limits can be entered as input to the spreadsheet. For CBOD and TSS, the discharge limits input into the spreadsheet were the monthly average limits in the facility's NPDES permit.

H. Receiving Water Background Concentrations

The background or upstream concentrations in the receiving water were all assumed to be zero. This is consistent with the approach PADEP used in the Fact Sheet for recent permit renewals.

I. Pollutant Levels in Sludge

The average pollutant concentrations in the sludge were based on data collected from the 5 days of sampling collected as part of the Headworks Analysis Sampling Plan and the quarterly data collected from 2006-2011.

J. Sludge Disposal Criteria

The spreadsheet uses sludge disposal criteria to calculate allowable headworks loadings that ensure compliance with applicable sludge disposal criteria. As previously mentioned, MSANK currently sends its dewatered sludge to a landfill. However, in accordance with USEPA guidance, the exceptional quality sludge criteria were used to calculate the updated local limits. These criteria are all expressed in terms of milligrams of pollutant per kilogram of sewage sludge on a dry weight basis.

6.5 Spreadsheet Output Data

Table 4 provides a summary of revised local limits calculated by the spreadsheet based on the use of the input parameters described above and the Uniform Concentration Limit approach. The table also lists the governing condition (i.e., the type of criteria that resulted in the most stringent allowable influent loading). A list of the existing local limits also is included for comparison purposes. A brief discussion of the results obtained for each parameter is provided below.

Existing Local Limit Parameters

1. $CBOD_5$

The existing local limit for $CBOD_5$ is 729 mg/l. The calculated limit for $CBOD_5$ is 1,339 mg/l. MSANK desires to retain their existing local limit of 729 mg/l. Retaining the existing limit is intended to assure compliance with the 25 mg/l monthly average discharge limitation in the facility's NPDES permit.

2. TSS

The existing local limit for TSS is 771 mg/l. The calculated limit for TSS is 1,397 mg/l. Consistent with the $CBOD_5$ parameter, MSANK desires to retain the existing local limit to assure compliance with the 30 mg/l monthly average discharge limitation in the facility's NPDES permit.

3. Arsenic

The governing condition in the calculation of the revised local limit for Arsenic was the exceptional quality sludge criterion. The calculated limit for Arsenic was 0.34 mg/l. MSANK desires to retain their existing local limit of 0.11 mg/l.

4. Cadmium

The governing condition in the calculation of the revised local limit for Cadmium was the exceptional quality sludge criterion. The revised local limit for Cadmium is 0.11 mg/l and the existing local limit is 0.2 mg/l. MSANK desires to adopt the revised local limit for Cadmium.

5. Total Chromium

The governing condition in the calculation of the existing and revised local limit for Total Chromium was based on preventing inhibition of the activated sludge process. The revised local limit for Total Chromium is 12.2 mg/l, compared to the existing limit of 13.1 mg/l. MSANK desires to adopt the revised limit of 12.2 mg/l.

6. Copper

The governing condition in the calculation of the revised local limit for Copper was the exceptional quality sludge criterion. The revised local limit for Copper is 0.69 mg/l and the existing local limit is 1.4 mg/l. MSANK desires to adopt the revised local limit for Copper.

7. Total Cyanide

The governing condition in the calculation of the revised local limit for Total Cyanide was based on inhibition of the activated sludge process. The revised local limit for Total Cyanide is 0.12 mg/l, compared to the existing limit of 0.17 mg/l. MSANK desires to adopt the revised limit of 0.12 mg/l.

8. Lead

The governing condition in the calculation of the revised local limit for Lead was the exceptional quality sludge criterion. The revised local limit for Lead is 0.17 mg/l and the existing limit is 2.31 mg/l. MSANK desires to adopt the revised local limit for Lead.

9. Mercury

The governing condition in the calculation of the revised local limit for Mercury was the exceptional quality sludge criterion. The revised local limit for Mercury is 0.016 mg/l and the existing limit is 0.019 mg/l. MSANK desires to adopt the revised local limit for Mercury.

10. Nickel

As discussed previously, MSANK is currently disposing of the sludge at a landfill however MSANK is interested in attaining the clean sludge criteria goals in order to enable an application to be submitted to the PA Department of Environmental Protection to request approval to distribute exceptional quality sludge. In recent history, the Nickel and Zinc concentrations in the sludge exceed the clean sludge goals for those parameters. The revised local limits for Nickel and Zinc were calculated differently from the other parameters. When the analytical results for Nickel and Zinc that were more than two standard deviations from the other data were eliminated from the calculations, the resulting limits inferred higher removal efficiencies than are actually the case based on historical sludge data. Since it is desired to have limits for Nickel and Zinc that represent actual removal efficiencies, the outlier data was included in the calculations. Additionally, the criteria in Table 3 of the spreadsheet were changed from influent / effluent to influent / sludge for Nickel and Zinc to be more representative of actual conditions.

The governing condition in the calculation of the revised local limit for Nickel was the exceptional quality sludge criterion. The revised local limit for Nickel is 0.22 mg/l and the existing limit is 0.72 mg/l. MSANK desires to adopt the revised local limit for Nickel.

11. Silver

The governing condition in the calculation of the revised local limit for Silver was water quality. The revised local limit for Silver was 1.30 mg/l. The existing local limit for Silver is 0.56 mg/l. MSANK desires to retain the existing local limit for Silver.

12. Zinc

As referenced previously the calculations for Nickel and Zinc were different than other parameters. The governing condition in the calculation of the revised local limit for Zinc was the exceptional quality sludge criterion. The revised local limit for Zinc is 1.99 mg/l and the existing limit is 2.77 mg/l. MSANK desires to adopt the revised local limit for Zinc.

13. pH

The pH of the influent collected during the Headworks Analysis Sampling Program ranged from a minimum of 7.1 s.u. to a maximum of 7.6 s.u. The pH of the effluent during this time period ranged from a minimum of 6.6 to a maximum of 7.5 s.u. The pH of the background samples during this time period ranged from a minimum of 6.8 to a maximum of 7.1 s.u.

Review of daily pH measurements of the MSANK treatment plant effluent during 2011 indicates the effluent pH ranged from a minimum of 6.5 to a maximum of 7.7 s.u. MSANK desires to retain their existing pH limits of 6.0-11.5 s.u.

14. Oil and Grease

The spreadsheet was not used to calculate a limit for Oil and Grease due to lack of criteria upon which to develop a revised local limit. The existing surcharge local limit for Oil and Grease appears to be based on criteria found in Section 3.10(h) of the MSANK Rules and Regulations Governing Sewage Services. The existing surcharge limit of 100 mg/l and fine limit of 500 mg/l are believed sufficient to protect the treatment system from obstruction of flow in the sewer and interference with treatment plant operations therefore MSANK desires to retain these limits.

15. Temperature

The spreadsheet was not used to calculate a limit for Temperature due to lack of criteria upon which to develop a revised local limit. The existing local limit for Temperature appears to be based on criteria found in Section 3.10(a) the MSANK Rules and Regulations Governing Sewage Services (1975, as amended). The existing limit of 150 F is believed to provide sufficient protection such that wastewater at the introduction of the treatment plant does not exceed a temperature of 104 F, so as not to inhibit biological activity in the treatment plant resulting in pass-through or interference.

7.0 RESULTS AND DISCUSSION

7.1 Results of Spreadsheet

Results of the spreadsheet using exceptional quality sludge criteria indicate that limits for Arsenic, Silver, CBOD and TSS were less stringent but MSANK desires to retain the existing limits for these parameters. The limits for Cadmium, Total Chromium, Copper, Total Cyanide, Lead, Mercury, Nickel, Selenium and Zinc were more stringent and MSANK desires to implement the lower limits. The differences in the limits are attributed to differences in sludge criteria, flow values, and removal efficiencies used in the calculations.

7.2 Limits Applicable to Keystone Rustproofing, Inc.

Keystone Rustproofing is regulated under Electroplating categorical limits in 40 CFR 413.14(c)-Pretreatment Standards for Existing Sources and under Metal Finishing categorical limits in 40 CFR 413.17 (a)-Pretreatment Standards for New Sources. The combined waste stream formula was used to calculate limits that were imposed in Keystone's permit starting in 2009. The daily maximum local limits for all parameters except chromium were more stringent than the limits calculated using the combined waste stream formula and were imposed in the permit. The combined waste stream formula limit for daily maximum chromium was imposed in the permit. Since MSANK does not impose monthly average local limits, the monthly average limits calculated using the combined waste stream formula were imposed in the permit.

Consistent with 2009, the 2012 daily maximum local limits for all parameters except chromium were more stringent than the limits calculated using the combined waste stream formula and will be imposed in the permit. The combined waste stream formula limit for daily maximum chromium will be imposed in the permit. Since MSANK does not impose monthly average local limits, the monthly average limits calculated using the combined waste stream formula will be imposed in the permit. See **Table 5** for the combined waste stream limits calculated using Keystone Rustproofing 2012 flow data.

Figure 1

Service Area Location Map

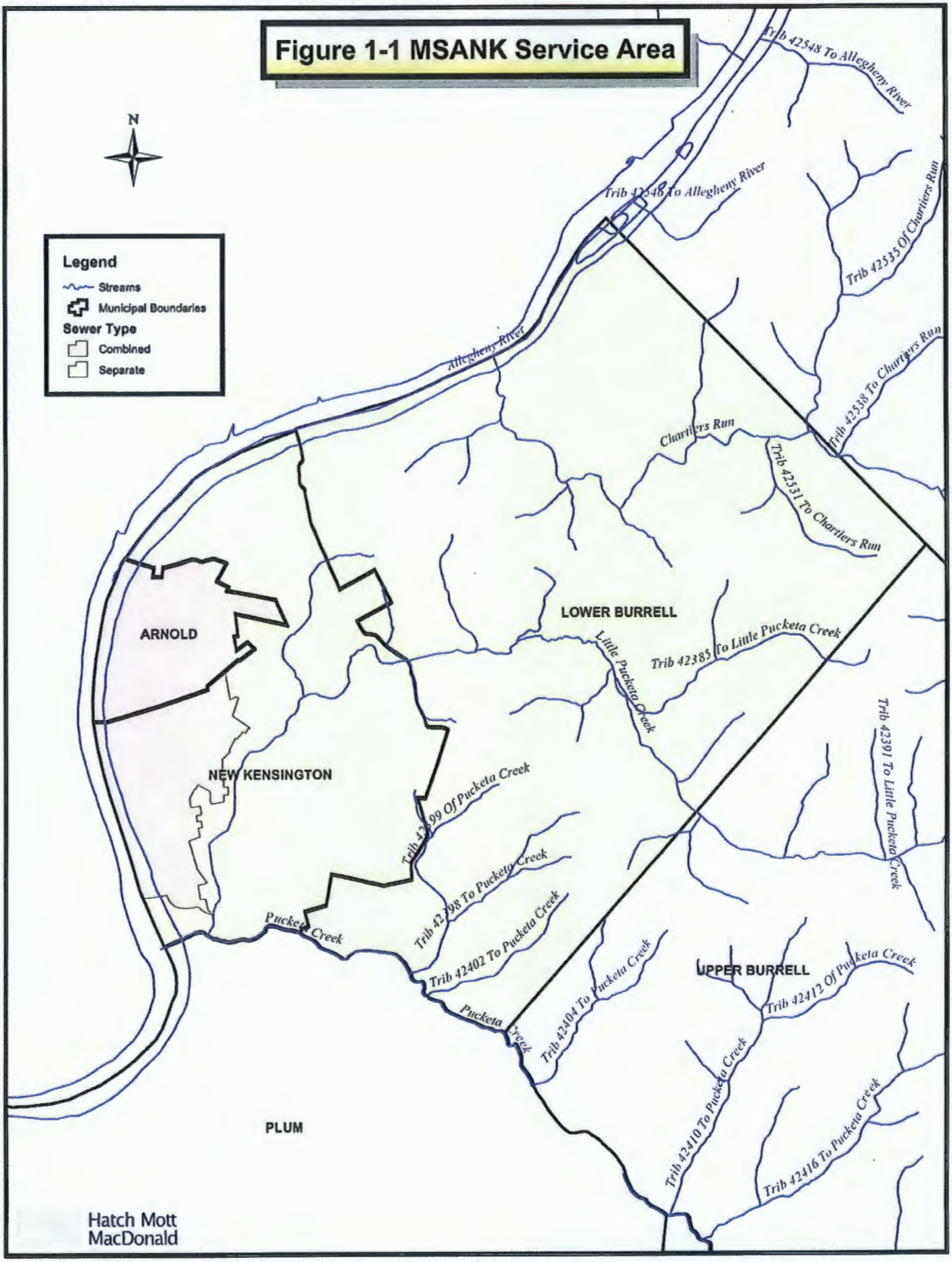
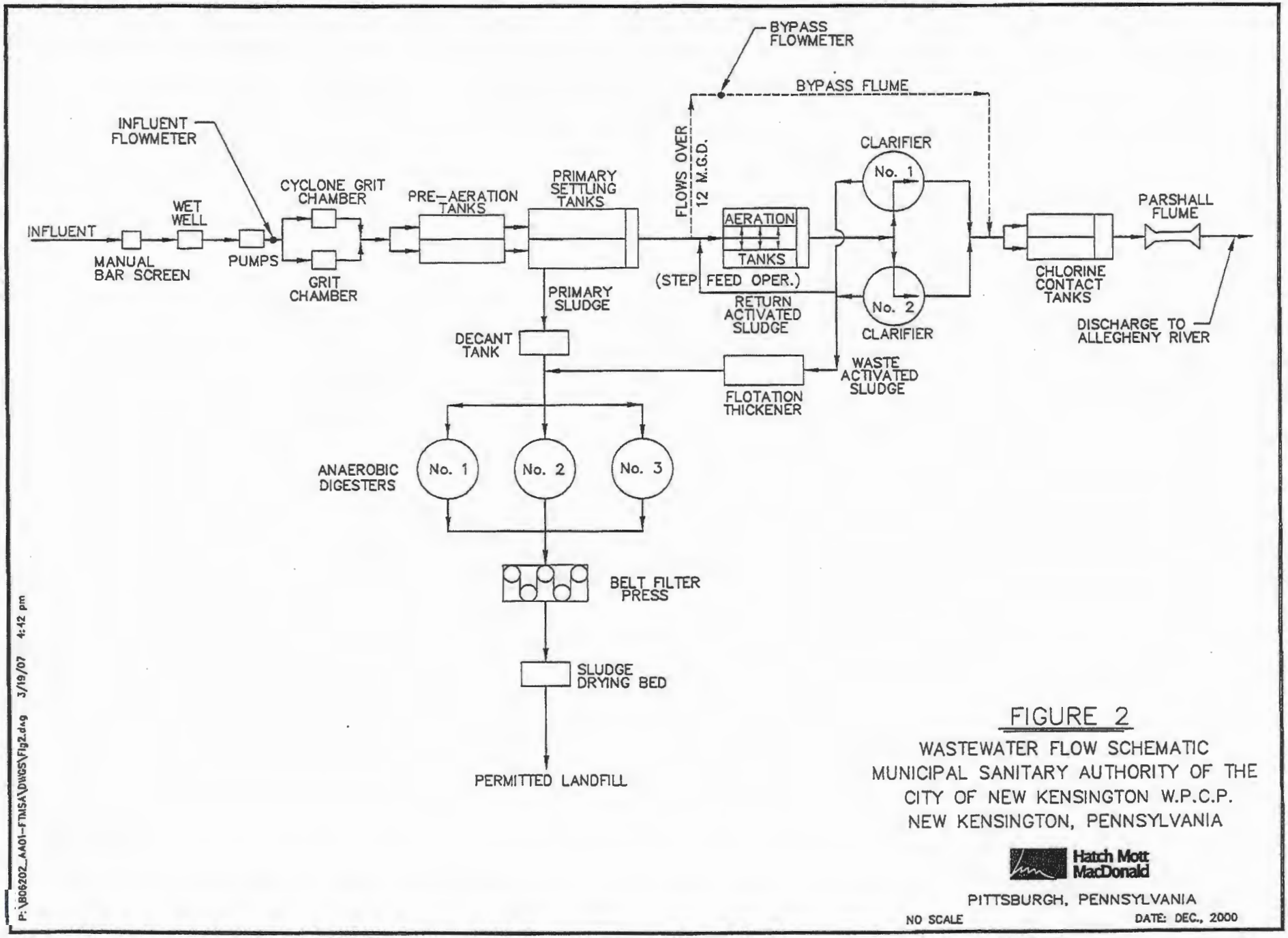


Figure 1-1 MSANK Service Area
N
Legend
Streams
Municipal Boundaries
Sewer Type
Combined
Separate
Trib 42548 To Allegheny River
Trib 42548 To Allegheny River
Trib 42535 Of Chartiers Run
Allegheny River
Trib 42538 To Chartiers Run
Chartiers Run
Trib 42531 To Chartiers Run
LOWER BURRELL
ARNOLD
Trib 42385 To Little Pucketa Creek
Little Pucketa Creek
Trib 42391 To Little Pucketa Creek
NEW KENSINGTON
Trib 42399 Of Pucketa Creek
Trib 42398 To Pucketa Creek
Pucketa Creek
Trib 42402 To Pucketa Creek
Pucketa Creek
Trib 42404 To Pucketa Creek
UPPER BURRELL
Trib 42412 Of Pucketa Creek
Trib 42410 To Pucketa Creek
Trib 42416 To Pucketa Creek
PLUM
Hatch Mott MacDonald

Figure 2

Sewage Treatment Plant Wastewater Flow Schematic



P:\B06202_AA01-FMSA\DWGS\Fig2.dwg 3/19/07 4:42 pm

FIGURE 2

WASTEWATER FLOW SCHEMATIC
MUNICIPAL SANITARY AUTHORITY OF THE
CITY OF NEW KENSINGTON W.P.C.P.
NEW KENSINGTON, PENNSYLVANIA

Hatch Mott MacDonald

PITTSBURGH, PENNSYLVANIA

NO SCALE

DATE: DEC., 2000

Table 1

MSANK 2011 Monthly Performance Summary

MUNICIPAL SANITARY AUTHORITY OF THE CITY OF NEW KENSINGTON
WASTEWATER TREATMENT PLANT
2011
MONTHLY PERFORMANCE SUMMARY

	INFLUENT						30 DAY AVERAGE - EFFLUENT					MAX. WEEKLY AVERAGE			MAXIMUM DAY			FINAL EFFLUENT	
	BYPASS FLOW	TREATED FLOW	TOTAL FLOW	FLOW MAX	BOD5 INF.	BOD5 INF.	CBOD5 EFF.	TSS EFF	EFFLUENT LOAD CBOD5	EFFLUENT LOAD TSS	FECAL COL.	CBOD5 mg/l LB./D	TSS mg/l LB./D	FECAL COL. #/100 ml	CBOD5 mg/l LB./D	TSS mg/l LB./D	FECAL COL. #/100 ml	CL2 mg/l	pH S.U.
	MGD	MGD	MGD	MGD	mg/l	LB./D	mg/l	mg/l	LB./D	LB./D	#/100 ml								
PLANT DESIGN	****	****	6.0	****	204	8500								1000					
PERMIT PA0027111							25	30	1251	1501	200 * 2000	37.5 1877	45 2252	****			****	1.0**	6.0 - 9.0
JANUARY 2011	0.203	5.540	5.743	8.83	109	5192	11	11	549	526	26	14.0 629	15 684	51	16 919	23 992	660	0.54	6.9 7.7
FEBRUARY 2011	1.756	6.359	8.115	14.75	78	5327	17	13	1192	1032	74	19.0 1729	21 1739	157	25 3075	45 5247	7200	0.57	7.1 7.6
MARCH 2011	3.176	6.626	9.802	15.08	49	3785	17	18	1462	1555	173	22.0 2365	27 2869	379	45 4785	36 4528	3700	0.52	7.1 7.6
APRIL 2011	3.400	6.637	10.037	14.80	69	5551	15	16	1276	1412	189	17.0 1547	23 2113	373	26 2370	51 4649	4365	0.71	7.1 7.4
MAY 2011	1.968	6.495	8.463	14.14	67	4550	11	9	817	704	38	12.0 1132	10 1047	56	18 1898	34 3584	270	0.82	6.8 7.4
JUNE 2011	0.122	4.997	5.119	7.98	106	4634	6	4	261	183	53	6.0 251	7 298	126	9 599	3 7720	2360	0.46	6.7 7.2
JULY 2011	0.303	4.667	4.970	9.82	114	4369	6	5	256	220	33	6.0 307	10.0 424	90	9 737	47 1842	3040	0.53	6.7 7.4
AUGUST 2011	0.135	4.437	4.572	8.16	106	4074	5	4	207	155	36	6.0 239	6 275	225	7 476	26 1221	1300	0.51	6.5 7.3
SEPTEMBER 2011	0.684	6.055	6.739	13.10	69	3727	7	6	400	328	68	7.0 555	6 459	80	10 834	8 823	4920	0.46	6.9 7.4
OCTOBER 2011	0.542	6.040	6.582	11.12	87	4727	9	10	526	601	83	15.0 853	20.0 1124	212	41 1939	28 2545	6000	0.52	6.5 7.4
NOVEMBER 2011	0.903	6.360	7.264	14.02	85	5128	9	10	578	593	76	10.0 788	16.0 690	168	155 1637	15 1754	2800	0.65	6.6 7.4
DECEMBER 2011	0.662	6.402	7.084	11.53	89	5051	12	14	717	802	114	13.0 1021	20 1054	242	87 1979	66 3842	8600	0.54	6.9 7.3
ANNUAL AVERAGE	1.155	5.885	7.041	MAX. 15.08	113	5097	10	10	687	676	80	12.3 951	15 1065	180	37 1771	32 3229	3768	0.57	6.8 7.4

CBOD5 - FIVE DAY CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND
TSS - TOTAL SUSPENDED SOLIDS
NH3-N - AMMONIA NITROGEN
DO - DISSOLVED OXYGEN
FECAL COL. - FECAL COLIFORM

*PERMIT LIMIT FOR PERIOD 5/1 - 9/30

denotes an exceedance

DECEMBER 2010	1.346	5.095	6.441	14.98	105	5130	13	12	681	630	471	13.0 1025	12 935	3203	15 1566	22 2297	10900	0.24	6.8 7.3

Table 2

MSANK Monitoring for Local Limit Parameters in 2011

Facility Name:	CITY OF NEW KENSINGTON MSA										
Facility ID:	PAP027111	UNITS:	MG/L								
Location:	INFLUENT			Date	Date	Date	Date	Date	Date	Date	Date
	Pollutant	Goals	Frequency	3/21-22/11	6/29-30/11	9/27-28/11	11/27-28/11	11/28-29/11	11/29-30/11	11/30-12/1/11	12/1-2/11
01002	ARSENIC- TOTAL	0.0125	4	<0.010	<0.010	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
80082	BOD- CARBONACEOUS 5-DAY	217.391	4	83.3	55.0	76.3	68.0	69.0	37.0	62.0	52.0
01027	CADMIUM- TOTAL	0.1052	4	0.082	0.010	<0.005	0.0004	0.0009	0.0005	0.001	0.0007
01032	CHROMIUM- HEXAVALENT	0.25	4	<0.010	<0.010	<0.010	<0.026	0.084	<0.026	<0.026	0.044
01034	CHROMIUM- TOTAL	1.3699	4	0.037	0.048	0.025	0.020	0.010	0.011	0.017	0.019
01042	COPPER- TOTAL	0.1934	4	0.020	0.026	0.058	0.040	0.026	0.037	0.055	0.039
00720	CYANIDE- TOTAL	0.0229	4	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
01051	LEAD- TOTAL	1.4632	4	0.013	0.008	0.010	<0.005	<0.005	<0.005	<0.005	<0.005
71900	MERCURY- TOTAL	0.02	4	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
01067	NICKEL- TOTAL	0.0794	4	0.075	0.090	0.051	0.030	0.067	0.032	0.041	0.030
46000	PHENOLS- TOTAL	50	4	0.112	<0.500	<0.500					
01147	SELENIUM- TOTAL	1.48	4	<0.010	<0.010	<0.010	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125
01077	SILVER- TOTAL	0.0586	4	<0.005	<0.005	<0.005	0.0008	0.0005	<0.0005	0.001	<0.0005
00530	SOLIDS- TOTAL SUSPENDED	294.118	4	120.0	112.0	69.0	90.0	68.0	36.0	76.0	63.0
01092	ZINC- TOTAL	0.559	4	0.334	0.613	0.266	0.170	0.130	0.140	0.230	0.170

Facility Name:	CITY OF NEW KENSINGTON MSA						
Facility ID:	PAP027111						
Location:	**INFLUENT**	Date	Date	Date	Date		Entry Count
	Pollutant					DTfl	115 Total
01002	ARSENIC- TOTAL						8
80082	BOD- CARBONACEOUS 5-DAY						8
01027	CADMIUM- TOTAL						8
01032	CHROMIUM- HEXAVALENT						8
01034	CHROMIUM- TOTAL						8
01042	COPPER- TOTAL						8
00720	CYANIDE- TOTAL						8
01051	LEAD- TOTAL						8
71900	MERCURY- TOTAL						8
01067	NICKEL- TOTAL						8
46000	PHENOLS- TOTAL						3
01147	SELENIUM- TOTAL						8
01077	SILVER- TOTAL						8
00530	SOLIDS- TOTAL SUSPENDED						8
01092	ZINC- TOTAL						8
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0
							0

Facility Name:	CITY OF NEW KENSINGTON MSA										
Facility ID:	PAP027111	UNITS:	MG/L								
Location:	EFFLUENT			Date	Date	Date	Date	Date	Date	Date	Date
	Pollutant	Goals	Frequency	3/21-22/11	6/29-30/11	9/27-28/11	11/27-28/11	11/28-29/11	11/29-30/11	11/30-12/1/11	12/1-2/11
01002	ARSENIC- TOTAL	3.0122	4	<0.010	<0.010	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005
80082	BOD- CARBONACEOUS 5-DAY	No Goal	0								
01027	CADMIUM- TOTAL	0.087	4	<0.005	<0.005	<0.005	<0.0006	<0.0006	<0.0006	<0.0006	0.0004
01032	CHROMIUM- HEXAVALENT	0.25	4	<0.010	<0.010	<0.010	<0.026	0.029	<0.026	<0.026	0.030
01034	CHROMIUM- TOTAL	Monitor	4	0.006	<0.005	<0.005	0.006	0.007	0.007	0.005	0.007
01042	COPPER- TOTAL	0.26	4	0.016	0.010	0.012	0.013	0.014	0.016	0.014	0.024
00720	CYANIDE- TOTAL	0.338	4	<0.010	0.010	<0.010	<0.010	0.038	<0.010	0.011	<0.010
01051	LEAD- TOTAL	0.66	4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
71900	MERCURY- TOTAL	0.008	4	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
01067	NICKEL- TOTAL	8.5	4	0.021	0.019	0.015	0.013	0.026	0.020	0.017	0.025
46000	PHENOLS- TOTAL	1562	4	0.053	<0.500	<0.500					
01147	SELENIUM- TOTAL	0.74	4	<0.010	<0.010	<0.010	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125
01077	SILVER- TOTAL	0.088	4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
00530	SOLIDS- TOTAL SUSPENDED	No Goal	0								
01092	ZINC- TOTAL	2.18	4	0.136	0.123	0.111	0.080	0.070	0.080	0.070	0.100

Facility Name:	CITY OF NEW KENSINGTON MSA						
Facility ID:	PAP027111						
Location:	**EFFLUENT**	Date	Date	Date	Date		Entry Count
	Pollutant					DTfl	99 Total
01002	ARSENIC- TOTAL						8
80082	BOD- CARBONACEOUS 5-DAY						0
01027	CADMIUM- TOTAL						8
01032	CHROMIUM- HEXAVALENT						8
01034	CHROMIUM- TOTAL						8
01042	COPPER- TOTAL						8
00720	CYANIDE- TOTAL						8
01051	LEAD- TOTAL						8
71900	MERCURY- TOTAL						8
01067	NICKEL- TOTAL						8
46000	PHENOLS- TOTAL						3
01147	SELENIUM- TOTAL						8
01077	SILVER- TOTAL						8
00530	SOLIDS- TOTAL SUSPENDED						0
01092	ZINC- TOTAL						8
							0
							0
							0
							0
							0
							0
							0
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							0
							0
							0
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							0

Facility Name:	CITY OF NEW KENSINGTON MSA									
Facility ID:	PAP027111	UNITS:	MG/KG							
Location:	SLUDGE		DRY WT	Date	Date	Date	Date	Date	Date	Date
	Pollutant	Goals	Frequency	3/22/11	6/30/11	9/28/11	11/28/11	11/29/11	11/30/11	12/1/11
01002	ARSENIC- TOTAL	39	4	<5.634	<5.206	8.515	<26.500	<28.500	<27.300	<28.100
80082	BOD- CARBONACEOUS 5-DAY	No Goal	0	48,338.00	10,671.50	330.5	674.0	912.0	602.0	584.0
01027	CADMIUM- TOTAL	41	4	18.028	98.907	38.850	14.100	14.600	14.200	14.300
01032	CHROMIUM- HEXAVALENT	Monitor	4	<2.254	<0.052	<0.053	217.900	479.900	311.800	470.200
01034	CHROMIUM- TOTAL	Monitor	4	459.718	707.965	622.672	654.000	651.000	311.800	627.000
01042	COPPER- TOTAL	1500	4	905.352	801.145	873.869	814.000	793.000	800.000	753.000
00720	CYANIDE- TOTAL	Monitor	4	18.310	10.151	5.721	<2.870	<3.030	<3.020	<2.970
01051	LEAD- TOTAL	300	4	115.493	118.168	135.178	115.000	120.000	110.000	108.000
71900	MERCURY- TOTAL	17	4	1.1268	1.5617	1.4902	1.660	2.030	2.070	1.450
01067	NICKEL- TOTAL	420	4	1215.775	959.917	921.767	1010.000	996.000	1040.000	958.000
46000	PHENOLS- TOTAL	No Goal	0							
01147	SELENIUM- TOTAL	100	4	<5.634	<5.634	<5.322	<26.500	<28.500	<27.300	<28.100
01077	SILVER- TOTAL	Monitor	4	56.901	32.795	29.271	22.400	23.400	22.200	21.500
00530	SOLIDS- TOTAL SUSPENDED	No Goal	0							
01092	ZINC- TOTAL	2800	4	2843.944	2946.382	3647.153	3720.000	3680.000	3720.000	3500.000

Facility Name:	CITY OF NEW KENSINGTON MSA							Entry Count
Facility ID:	PAP027111							
Location:	**SLUDGE**	Date	Date	Date	Date	Date		
	Pollutant	**12/2/11**					DTfl	104 Total
01002	ARSENIC- TOTAL	<24.800						8
80082	BOD- CARBONACEOUS 5-DAY	792.0						8
01027	CADMIUM- TOTAL	14.600						8
01032	CHROMIUM- HEXAVALENT	610.700						8
01034	CHROMIUM- TOTAL	683.000						8
01042	COPPER- TOTAL	820.000						8
00720	CYANIDE- TOTAL	<2.950						8
01051	LEAD- TOTAL	114.000						8
71900	MERCURY- TOTAL	1.930						8
01067	NICKEL- TOTAL	1040.000						8
46000	PHENOLS- TOTAL							0
01147	SELENIUM- TOTAL	<24.800						8
01077	SILVER- TOTAL	23.100						8
00530	SOLIDS- TOTAL SUSPENDED							0
01092	ZINC- TOTAL	3860.000						8
								0
								0
								0
								0
								0
								0
								0
								0
								0
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								0
								0
								0
								0

Table 3

Listing of Significant Industrial Users

Municipal Sanitary Authority of the City of New Kensington
Industrial Pretreatment Program

Pretreatment Year 2011
Significant Industrial Users Regulated Under Pretreatment Permits

SIGNIFICANT / MAJOR / CATEGORICAL

	Name of Industry	SIC Code	Pretreatment Classification	Description of Operations
1	Keystone Rustproofing Inc.	3471	Significant/Major Categorical	Surface Treatments and Protective Coatings for Metal components. Processes include electroplating, anodizing and metallic conversion coatings

SIGNIFICANT / MAJOR / NONCATEGORICAL

2	Farmland Foods (North Side Foods)	2013	Significant/Major Noncategorical	Process raw pork, beef, and turkey into pre-cooked sausage, bacon, and meatballs.
3	Unifirst Corporation	7218	Significant/Major Noncategorical	Uniform rental, servicing and laundering operation

SIGNIFICANT / MINOR / NONCATEGORICAL

4	Castle CoPacking, Inc.	2086	Significant/Minor Noncategorical	Beverage bottling
5	Citizens Ambulatory Care Center (former Citizens General Hospital)	8062	Significant/Minor Noncategorical	Inpatient and outpatient treatment
6	Schreiber Industrial Development Company	9999	Significant/Minor Noncategorical	Managers of an Industrial Park with approximately 24 industries.

Table 4

Summary of Recalculated Local Limits and Limits Requested for USEPA Approval

Municipal Sanitary Authority of the City of New Kensington
Headworks Analysis for Local Limits Reevaluation
Table 4
Limits Requested for Approval

Parameter	Units	Keystone Rustproofing Fine Limits	Existing Fine Limits	Uniform Concentration Limits Calculated Limits	Uniform Concentration Limits Requested For Approval	Governing Criteria in the Calculation
Arsenic	mg/l	0.11	0.11	0.34	0.11	Sludge
Cadmium	mg/l	0.2	0.2	0.11	0.11	Sludge
Total Chromium	mg/l	5.58	13.1	12.2	12.20	Inhibition
Copper	mg/l	1.4	1.4	0.69	0.69	Sludge
Total Cyanide	mg/l	0.15	0.17	0.12	0.12	Inhibition
Lead	mg/l	0.6	2.31	0.17	0.17	Sludge
Mercury	mg/l	0.019	0.019	0.016	0.016	Sludge
Nickel	mg/l	0.72	0.72	0.22	0.22	Sludge
Selenium	mg/l	14.1	14.1	1.36	1.36	Sludge
Silver	mg/l	0.56	0.56	1.3	0.56	Water Quality
Zinc	mg/l	3	2.77	1.99	1.99	Sludge
Total Suspended Solids	mg/l	771	771	1397	771	Design
CBOD5	mg/l	729	729	1339	729	Design
pH	s.u.	6-10.5	6.0-10.5	N/A	6.0-10.5	N/A
Temperature	Deg. F	150	150	N/A	150	N/A
Oil and Grease	mg/l	500	500	N/A	500	N/A

REVISED 8/29/2012

Table 5

Combined Wastestream Formula Limits
Applicable to Keystone Rustproofing, Inc.

Table 5 - Combined Wastestream Limits Applicable to Keystone Rustproofing

Parameter	Units	2012 Combined Wastestream Daily Maximum mg/l	2012 Combined Wastestream Monthly Average mg/l
Cadmium	mg/l	0.85	0.36
Total Chromium	mg/l	5.63	2.25
Copper	mg/l	4.1	1.89
Total Cyanide	mg/l	1.84	0.58
Lead	mg/l	0.63	0.34
Nickel	mg/l	4.08	1.99
Silver	mg/l	0.64	0.31
Zinc	mg/l	3.69	1.7
pH	s.u.	6.0-11.5	6.0-11.5
Total Toxic Organics	mg/l	2.13	N/A
Total Metals	mg/l	10.5	N/A

Conclusion: The local limits are more stringent for all daily maximum parameters except total chromium

Production Lines	Categorical Standard		Cyanide and Silver Bearing Waste Streams	Water Usage Gallons Per Week	Water Usage Gallons Per Day
Copper, Nickel, Chrome	Electroplating	PSES	Cyanide and Silver	6,000	1,200
Selective Tin	Electroplating	PSES	N/A	3,000	600
Alodine	Electroplating	PSES	N/A	4,000	800
Silver/Tin on Aluminum	Metal Finishing	PSNS	Cyanide and Silver	18,000	3,600
Dull Tin / Cad	Metal Finishing	PSNS	Cyanide	3,000	600
Barrel Nickel	Electroplating	PSES	N/A	8,000	1,600
Rack Silver	Electroplating	PSES	Cyanide and Silver	6,500	1,300
Rack Zinc	Electroplating	PSES	N/A	19,000	3,800
Barrel Zinc	Electroplating	PSES	N/A	22,000	4,400
Anodize	Metal Finishing	PSNS	N/A	8,000	1,600
Large Bright Tin	Metal Finishing	PSNS	N/A	5,000	1,000
Total				**102,500**	**20,500**

Wastestream	Daily Flow	
Copper, Nickel, Chrome	1,200	gpd
Rack silver	1,300	gpd
	2,500	Total cyanide bearing wastestreams regulated under electroplating
Silver / Tin on Aluminum	3,600	gpd total cyanide bearing wastestreams
Dull Tin Cad	600	regulated under metal finishing
	4,200	

Wastewater associated with the new process lines
referred to as "anodize", "Dull tin/cad" "Birght Tin" and "silver/tin on alum."
are regulated under the PSNS standards for
Metal Finishing under 40 CFR 433.17(a)
These wastestreams total 6,800 gallons per day

Anodize 1,600 +Dull Tin/Cad 600+ silver tin on alum. 3600
bright tin 1000 = 6,800 gpd

Wastewater associated with the old process lines
referred to as "alkaline barrel zinc", "alkaline rack zinc"
phosphate and passivate, "rack silver line," barrel nickel",
alodine," selective tin", and "copper/nickel/chrome"
are regulated under the PSES standards for

Electroplating under 40 CFR 433.24(c)
These wastestreams total 14,300 gallons per day

Total Influent to Treatment Plant = 21,100 gpd

Parameter	40 CFR 413.24 (c) Daily Maximum Pretreatment Standards for Existing Sources Electroplating Subcategory	40 CFR 413.24 (c) Average of Daily Values for 4 consecutive monitoring days	40 CFR 413.04 Standards for Integrated Facilities Equivalent 30-day average	40 CFR 433.17 (a) Daily Maximum Pretreatment Standards for New Sources Metal Finishing Subcategory	40 CFR 433.17 (a) Monthly Average Pretreatment Standards for New Sources Metal Finishing Subcategory
Silver	1.2	0.7	0.5	0.43	0.24
Total cyanide	1.9	1	0.55	1.2	0.65
Copper	4.5	2.7	1.8	3.38	2.07
Nickel	4.1	2.6	1.8	3.98	2.38
Chromium	7	4.0	2.5	2.77	1.71
Zinc	4.2	2.6	1.8	2.61	1.48
Lead	0.6	0.4	0.3	0.69	0.43
Cadmium	1.2	0.7	0.5	0.11	0.07
Total Toxic Organics	2.13	-	-	2.13	-
Total Metals	10.5	6.8	5	-	-

New Source Calculations

Other Pollutants:

Metal Finishing Regulated Flow = 6,800 gpd (1600+600+3600+1000 = 6,800)

Electroplating Regulated Flow = 14,300 gpd (21,100 - 6,800 = 14,300)

Unregulated Flow = 0 gpd

Dilution = 0 gpd

(Metal Finishing Standard x 6,800 gpd) + (Electroplating Standard x 14,300 gpd) / 21,100 X (21,100 - 0)/ 21,100 gpd)

Cadmium = (0.11x 6,800) + (1.2 x 14,300 gpd)/ 21,100 x 1 = 0.85 mg/l daily maximum

Total chromium = (2.77 x 6,800) + (7.0 x 14,300) / 21,100 x 1 = 5.64 mg/l daily maximum

Copper = (3.38 x 6,800) + (4.5 x 14,300) / 21,100 x 1= 4.14 mg/l daily maximum

Lead = (0.69 x 6,800) + (0.60 x 14,300) / 21,100 x 1= 0.63 mg/l daily maximum

Nickel = (3.98 x 6,800) + (4.1 x 14,300) / 21,100 x 1 = 4.06 mg/l daily maximum

Zinc = (2.61 x 6,800) + (4.2 x 14,300) / 21,100 x 1 = 3.69 mg/l daily maximum

For Silver Daily Maximum

Metal Finishing Regulated Flow = 6,800 gpd (1,600+600+3,600+1,000 = 6,800 gpd)

Electroplating Regulated Flow = 2,500 gpd (1,200 + 1,300 = 2,500 gpd)

Unregulated Flow = 11,800 gpd (21,100 - 6,800 - 2,500 = 11,800 gpd)

Dilution = 0 gpd

Metal Finish silver limit x 6,800 gpd + precious metals electroplating silver limit x 2,500 gpd / regulated flow x Total Flow - dilution flow / total flow

(0.43 x 6,800 gpd) + (1.2 x 2,500) / 9,300 x 21,100 - 0 / 21,100 = 0.64 daily maximum

For Cyanide Daily Maximum

Metal Finishing Regulated Flow = 2,500 gpd (1,200 + 1,300 = 2,500 gpd)

Electroplating Regulated Flow = 14,300 gpd (21,100 - 6,800 = 14,300 gpd)

Unregulated Flow = 0 gpd

Dilution = 2,600 gpd (1,600+1,000 = 2,600 gpd)

(Metal Finish cyanide limit x metal finish regulated flow) + (electro cyanide limit x electro flow) / electro regulated flow X (Total Flow - dilution flow)/dilution flow

(1.2 x 2,500 gpd) + (1.9 x 14,300 gpd) / 14,300 X (21,100 - 2,600)/ 21,100 = 1.85 mg/l daily maximum

For Silver Monthly Average

Metal Finishing Regulated Flow = 6,800 gpd (3,600+600+1,600+1,000 = 6,800 gpd)

Electroplating Regulated Flow = 2,500 gpd (1,300 + 1,200 = 2,500 gpd)

Unregulated Flow = 11,800 gpd (21,100 - 6,800 - 2,500 = 11,800 gpd)

Dilution = 0 gpd

(monthly average metal finish limit x metal finish regulated flow) + (adjusted average electro limit x electro flow) /Total Regulated flow X (total flow - dilution flow) / total flow

(0.24 x 6,800 gpd) + (0.5 x 2,500 gpd)/ 9,300 gpd X 21,100 - 0 / 21,100) = 0.31 mg/l silver monthly average

For Cyanide Monthly Average
Metal Finishing Regulated Flow = 2,500 gpd
Electroplating Regulated Flow = 14,300 gpd
Unregulated Flow = 0 gpd
Dilution = 2,600 gpd

(monthly average metal finishing limit x metal finish regulated flow) + (adjusted average electro limit x electro flow) / (electroplating regulated flow X (total flow - dilution flow) / total flow
(0.65 x 2,500 gpd) + (0.55 x 14,300 gpd)/ 14,300 gpd X (21,100 pgd - 2,600 gpd)/ 21,100 gpd = 0.58 mg/l

Other Pollutants:
Monthly Average
Metal Finishing Regulated Flow = 6,800 gpd
Electroplating Regulated Flow = 14,300 gpd
Dilution = 0 gpd

(Metal Finishing Standard x 6,800 gpd) + (Electroplating Standard x 14,300 gpd) / 21,100 x (21,100 - 0)/ 21,100 gpd)
Cadmium = (0.07x 6,800) + (0.5 x 14,300 gpd)/ 21,100 x 1 = 0.36 monthly average
Total chromium = (1.71 x 6,800) + (2.5 x 14,300) / 21,100 x 1 = 2.25 mg/l monthly average
Copper = (2.07 x 6,800) + (1.8 x 14,300) / 21,100 x 1= 1.89 mg/l monthly average
Lead = (0.43 x 6,800) + (0.3 x 14,300) / 21,100 x 1= 0.34 mg/l monthly average
Nickel = (2.38 x 6,800) + (1.8 x 14,300) / 21,100 x 1 = 1.99 mg/l monthly average
Zinc = (1.48 x 6,800) + (1.8 x 14,300) / 21,100 x 1 = 1.70 mg/l monthly average

Appendix A

Headworks Analysis Sampling Plan and USEPA Approval Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Mr. Daniel H. Rowe, Jr., Manager
The Municipal Authority of the City of New Kensington
120 Logans Ferry Road
New Kensington, Pennsylvania 15068-2046

SEP 23 2011

Re: Pretreatment Program – Headworks Analysis Sampling Plan
NPDES No. PA0027111

Dear Mr. Rowe:

Thank you for your August 8, 2011 submittal of the Headworks Analysis Sampling Plan to Elizabeth Ottinger of our pretreatment staff. My comments are as follows:

Pollutants to be Evaluated – The list you provided appears to include all of the pollutants of concern that EPA normally proposes to be covered. The only additional pollutants would be any priority pollutants that were determined in the priority pollutant scan, or any pollutants discharged from a User that were not previously accounted for. See the enclosure for further guidance.

Sampling Points – No comments warranted.

Number and Type of Sampling Events – No comments warranted.

Analytical Methods/Detection Levels – No comments warranted.

Schedule – Since EPA was a little late in reviewing this, and the Sample Collection was to start in September 2011, you can begin the sample collection as soon as possible. I will be e-mailing a copy of this letter to you today, in addition to providing a hard copy.

Please proceed with the sampling and data collection. If you have any questions or comments, feel free to contact Liz Ottinger at (215) 814-5783, or me at (215) 814-5792.

Sincerely,

Stephen G. Copeland
NPDES Permits Branch (3WP41)
Water Protection Division

Enclosure

cc: Linda French, Hach-Mott Engineers (with enclosure)
David Ponchione, PADEP, Southwest Region (w/o enclosure)
Sean Furjanic, PADEP, Central Office (w/o enclosure)

HEADWORKS ANALYSIS SAMPLING PLAN

A. Pollutants to be Evaluated

MSANK proposes to evaluate a total of eighteen parameters as part of the Headworks Analysis. The Headworks Analysis evaluation will consist of the "standard ten" parameters including Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Silver and Zinc. Molybdenum and Selenium will also be evaluated due to their inclusion in EPA's and Pennsylvania sludge quality program. MSANK also has local limitations for Carbonaceous Biochemical Oxygen Demand, Total Suspended Solids, Hexavalent Chromium, Oil and Grease, Temperature and pH. No additional toxic pollutants are listed in the NPDES permit, nor have other priority pollutants been detected at significant levels during the priority pollutant scans conducted during the quarterly monitoring required by the Pretreatment Program.

B. Sampling Points

MSANK proposes the use of five sampling locations to conduct the Headworks Analysis. The proposed sampling locations are:

1. Raw Influent – the raw influent samples will be collected prior to the influent combining with any recycle or other internal waste streams.

2. Influent to Digester

3. Final Effluent

4. Background samples solely from domestic sources - MSANK applies the local limitations to commercial as well as industrial facilities within the service area. The Municipal Water Authority of the City of New Kensington is the sole supplier of potable water within the MSANK service area. MSANK proposes to collect background samples from sewer segments located in residential sections of Lower Burrell, the City of Arnold and the City of New Kensington. The background samples will be collected on the same days that the Influent and Effluent samples are collected.

5. Sludge

C. Number and Type of Sampling Events

1. Historical Sample Data

MSANK proposes to use historical monitoring data from years 2006 to 2010 to supplement the samples to be collected for the Headworks Analysis.

2. Proposed Sample Data

In order to assess current plant conditions, MSANK proposes to supplement the referenced historical data by conducting sampling on a daily basis for a five-day period. Grab samples will be collected for Cyanide, Hexavalent Chromium, and

Oil and Grease. Temperature and pH will be evaluated through on-site testing procedures. All other parameters will be evaluated using 24-hour composite samples. Proposed sample data includes the following:

a. Raw Influent and Final Effluent

Five, 24-hour composite samples of the Raw Influent and Final Effluent samples will be collected for analysis. These samples will be analyzed for the eighteen parameters referenced previously.

b. Influent to Digester

A total of five daily grab samples of Influent to Digester will be collected and analyzed for the non-conservative parameter of Cyanide. The samples will be collected on days when Influent and Effluent samples are being collected.

c. Background

Six, 24-hour composite samples of Background wastewater from domestic sources will be analyzed for the eighteen parameters referenced previously. Two samples will be collected from a background sampling location in New Kensington, two samples will be collected from a sampling location in Arnold and two samples will be collected from a sampling location in Lower Burrell.

d. Sludge

Five samples of sludge will be collected from the belt filter press area at the treatment plant. In order to obtain a representative sample, grab samples of sludge will be collected and then combined to form a single composite sample of sludge that will be analyzed for the eighteen parameters referenced previously. One composite sample of sludge will be collected per day, over a five-day period. Sludge samples will be collected on days when Influent and Effluent samples are being collected.

D. Analytical Methods/Detection Levels

MSANK proposes to conduct all pollutant analyses using EPA methodology with the most sensitive detection levels available for each method. A listing of the parameters and the proposed analytical methods are as follow:

Parameter	Analytical Method	Parameter	Analytical Method
Arsenic	SM18 3113B	Total Suspended Solids	SM18 2540D
Cadmium	EPA 200.8	Hexavalent Chromium	EPA 218.4
Chromium	EPA 200.8	Oil and Grease	EPA 1664A
Copper	EPA 200.7	pH	EPA 150.1
Cyanide	EPA 335.3	Lead	SM18 3113B

Parameter	Analytical Method	Parameter	Analytical Method
Mercury	SM18 3112B	Temperature	SM18 2550B
Nickel	EPA 200.8	Carbonaceous Biochemical	
Silver	EPA 272.2	Oxygen Deman d	EPA 405.1
Zinc	EPA 200.7		
Molybdenum	EPA 200.8		
Selenium	SM18 3114B		

E. Schedule

MSANK proposes to conduct the required headworks analysis under the following schedule:

Sample Collection	September 2011
Evaluation of Sample Collection Data	October 2011
Headwork Analysis / Local Limits Reevaluation	November 2011
Submission of Local Limits Reevaluation to EPA	December 2011

Appendix B

Spreadsheet Output

POTW Name:

Local Limits Calculation

Table 1 - Unit Operations (X if present)

Activated Sludge Present?	Trickling Filter Present?	Nitrification Present?	Anaerobic Digestion Present?	Sludge Incineration Present?
x			x	

TABLE 2a - Stream Flow Partial Mix Factors

Complete Mix Time (minutes) (CMT)	Q7-10 Stream Flow (MGD) (Q7-10)	Harmonic Mean Stream Flow (MGD) (Qhm)	Acute Standards Compliance Time (minutes) (CTac)	Acute Partial Mix Factor (PMFa)	Other Standards Compliance Time (minutes) (CToc)	Other Partial Mix Factor (PMFo)
2779.00	1874	5099	15	0.073	720	0.509

(CMT) Time for discharge to mix completely in receiving stream in minutes (user entered).
(Q7-10) 7-day, 10-year low flow for receiving stream in MGD (user entered).
(Qhm) Harmonic mean flow for receiving stream in MGD (user entered).
(CTac) Compliance time for acute water quality standards in minutes (15 minutes for PA).
(PMFa) Partial mix factor for acute water quality standards (calculated).
PMFa = Square root of (CMT / CTac)
(CToc) Compliance time for chronic and threshold human health water quality standards in minutes (720 minutes for PA).
(PMFo) Partial mix factor for chronic and threshold human health water quality standards (calculated).
PMFo = Square root of (CMT / CToc)

TABLE 2b - POTW and Receiving Stream Data

POTW Flow (MGD) (Qpotw)	IU Flow (MGD) (Qind)	Sludge Flow to Digester (MGD) (Qdig)	Sludge Flow to Disposal (MTD) (Qsldg)	Stream Flow for Chronic WQS (MGD) (Qstr1)	Stream Flow for Acute WQS (MGD) (Qstr2)	Stream Flow for Threshold Human Health WQS (MGD) (Qstr3)	Stream Flow for Carcinogen Human Health WQS (MGD) (Qstr4)	Rec
6.001	0.586	0.037	1	953.88	137.68	953.88	5099.00	

(Qpotw) POTW's average flow in Million Gallons per Day (user entered).
(Qind) Average Industrial User total discharge flow in MGD (user entered).
(Qdig) Average sludge flow to digester in MGD (user entered).
(Qsldg) Average sludge flow to disposal in dry metric tons per day (user entered).
(Qstr1) Receiving stream (upstream) flow used with chronic water quality standards in MGD (calculated).
Qstr1 = Q7-10 * PMFo (data from Table 2a, cells C16 and H16)
(Qstr2) Receiving stream (upstream) flow used with acute water quality standards in MGD (calculated).
Qstr2 = Q7-10 * PMFa (data from Table 2a, cells C16 and F16)
(Qstr3) Receiving stream (upstream) flow used with threshold human health water quality standards in MGD (calculated).
Qstr3 = Q7-10 * PMFo (data from Table 2a, cells C16 and H16)
(Qstr4) Receiving stream (upstream) flow used with carcinogen human health water quality standards in MGD (calculated).
Qstr4 = Qhm (data from Table 2a, cell D16) If cell D16 is blank, formula below is used:
or Qstr4 = $7.43*(Q7\text{-}10)^{0.874}$ (data from cell C16)
(H) Receiving stream hardness in mg/l (user entered).
(Qhw) Hauled waste flow in MGD (user entered).
(DF) Incinerator dispersion factor in ug/m^3/g/sec (user entered).
(Qinc) Average sludge flow to incineration in dry metric tons per day (user entered).

POTW Name:

Local Limits

TABLE 3 - Local Limits Determination Based on NPDES Effluent Limits

	LOCAL LIMITS CALCULATION DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	NPDES Limit (mg/l) (Ccrit)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rpotw)	Allowabl Headwork (lbs/day) (Lhw)
Arsenic	6.001		Influent/Sludge	5.06	-
Cadmium	6.001		Influent/Sludge	15.50	-
Chromium	6.001		Influent/Effluent	67.19	-
Copper	6.001		Influent/Effluent	74.97	-
Cyanide	6.001		Default (activated sludge)	69.00	-
Lead	6.001		Influent/Effluent	70.17	-
Mercury	6.001		Influent/Sludge	44.87	-
Molybdenum	6.001		Influent/Effluent	17.00	-
Nickel	6.001		Influent/Sludge	67.86	-
Selenium	6.001		Influent/Effluent	3.17	-
Silver	6.001		Influent/Effluent	0.00	-
Zinc	6.001		Influent/Sludge	45.90	-
Ammonia	6.001		Influent/Effluent	90.14	-
BOD	6.001	25		-	-
TSS	6.001	30		-	-
Beryllium	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	85.53	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-
	6.001		Influent/Effluent	-	-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Ccrit)	NPDES permit limit for a particular pollutant in mg/l (user entered)
(Rpotw)	Removal efficiency across POTW as percent (Inf/Eff Removal (row 47), Inf/Sldg Removal (row 48), or Daily Removal (row 43) from 'Moni
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	(8.34 * Ccrit * Qpotw) / (1-Rpotw/100)
8.34	Unit conversion factor

POTW Name:

TABLE 4 - Local Limits Determination Based on Chronic Water Quality Standards

	LOCAL LIMITS CALCULATION DATA				
Pollutant	POTW Flow (MGD) (Qpotw)	Receiving Stream Flow (MGD) (Qstr1)	Receiving Stream Concentration (mg/l) (Cstr)	Chronic WQS (mg/l) (Ccrit)	Remova Efficienc (%) (Rpotw
Arsenic	6.001	953.88		0.15000	
Cadmium	6.001	953.88		0.00031	
Chromium	6.001	953.88			
Copper	6.001	953.88		0.01106	
Cyanide	6.001	953.88		0.00520	
Lead	6.001	953.88		0.00410	
Mercury	6.001	953.88		0.00091	
Molybdenum	6.001	953.88			
Nickel	6.001	953.88		0.06172	
Selenium	6.001	953.88		0.00500	
Silver	6.001	953.88			
Zinc	6.001	953.88		0.14180	
Ammonia	6.001	953.88			
BOD	6.001	953.88			-
TSS	6.001	953.88			-
Beryllium	6.001	953.88			-
	6.001	953.88			
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-
	6.001	953.88			-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Qstr1)	Receiving stream (upstream) flow used with chronic water quality standards in MGD (from Table 2(b), cell F36).
(Cstr)	Receiving stream background concentration in mg/l (user entered)
(Ccrit)	State chronic water quality standard for a particular pollutant in mg/l (from PADEP Chapter 16 Appendix A Table 1 or user entered)
(Rpotw)	Removal efficiency across POTW as percent (from Table 3, column E).
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	8.34 * (Ccrit * (Qstr1 + Qpotw) - (Cstr * Qstr1)) / (1-Rpotw/100)
8.34	Unit conversion factor

POTW Name:

TABLE 5 - Local Limits Determination Based on Acute Water Quality Standards

	LOCAL LIMITS CALCULATION DATA				
Pollutant	POTW Flow (MGD) (Qpotw)	Receiving Stream Flow (MGD) (Qstr2)	Receiving Stream Concentration (mg/l) (Cstr)	Acute WQS (mg/l) (Ccrit)	Removal Efficiency (%) (Rpotw)
Arsenic	6.001	137.68	0	0.34000	
Cadmium	6.001	137.68	0	0.00261	
Chromium	6.001	137.68	0		
Copper	6.001	137.68	0	0.01688	
Cyanide	6.001	137.68	0	0.02200	
Lead	6.001	137.68	0	0.10516	
Mercury	6.001	137.68	0	0.00165	
Molybdenum	6.001	137.68	0		
Nickel	6.001	137.68	0	0.55513	
Selenium	6.001	137.68	0		
Silver	6.001	137.68	0	0.00533	
Zinc	6.001	137.68	0	0.14180	
Ammonia	6.001	137.68	0		
BOD	6.001	137.68	0		-
TSS	6.001	137.68	0		-
Beryllium	6.001	137.68	0		-
	6.001	137.68	0		
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-
	6.001	137.68	0		-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Qstr2)	Receiving stream (upstream) flow used with acute water quality standards in MGD (from Table 2(b), cell G36).
(Cstr)	Receiving stream background concentration in mg/l (from Table 3, column D).
(Ccrit)	State acute water quality standard for a particular pollutant in mg/l (from PADEP Chapter 16 Appendix A Table 1 or user entered)
(Rpotw)	Removal efficiency across POTW as percent (from Table 3, column E).
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	8.34 * (Ccrit * (Qstr2 + Qpotw) - (Cstr * Qstr2)) / (1-Rpotw/100)
8.34	Unit conversion factor

POTW Name:

Local Limits

TABLE 6 - Local Limits Determination Based on Human Health Water Quality Standards

Pollutant	LOCAL LIMITS CALCULATION DATA POTW Flow (MGD) (Qpotw)	Receiving Stream Flow (MGD) (Qstr3 or Qstr4)	Receiving Stream Concentration (mg/l) (Cstr)	Human Health WQS (mg/l) (Ccrit)	Select Basis o Standar (from lis
Arsenic	6.001	953.88	0	0.01	Threshold Hu
Cadmium	6.001	-	0		
Chromium	6.001	-	0		
Copper	6.001	-	0		
Cyanide	6.001	953.88	0	0.14	Threshold Hu
Lead	6.001	-	0		
Mercury	6.001	953.88	0	0.00005	Threshold Hu
Molybdenum	6.001	-	0		
Nickel	6.001	953.88	0	0.61	Threshold Hu
Selenium	6.001	-	0		
Silver	6.001	-	0		
Zinc	6.001	-	0		
Ammonia	6.001	-	0		
BOD	6.001	-	0		
TSS	6.001	-	0		
Beryllium	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		
	6.001	-	0		

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Qstr3)	Receiving stream (upstream) flow used with human health water quality standards in MGD (from Table 2(b), cell H36 or I36).
(Cstr)	Receiving stream background concentration in mg/l (from Table 4, column D).
(Ccrit)	State human health water quality standard for a particular pollutant in mg/l (from PADEP Chapter 16 Appendix A Table 1 or user entered
(Rpotw)	Removal efficiency across POTW as percent (from Table 3, column E).
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	8.34 * (Ccrit * (Qstr3 + Qpotw) - (Cstr * Qstr3)) / (1-Rpotw/100)
8.34	Unit conversion factor

POTW Name:

TABLE 7 - Comparison of Water Quality Allowable Headworks Loadings

Pollutant	Allowable Headworks (NPDES) (lbs/day)	Allowable Headworks (CHRONIC) (lbs/day)	Allowable Headworks (ACUTE) (lbs/day)	Allowable Headworks (HUMAN HEALTH) (lbs/day)	Allowab Headwo (WATER QU (lbs/da
Arsenic	-	1264.8387	429.1479	84.3226	
Cadmium	-	2.9707	3.7027	-	
Chromium	-	-	-	-	-
Copper	-	353.6055	80.8250	-	
Cyanide	-	134.2836	85.0406	3615.3273	
Lead	-	109.9679	422.4114	-	
Mercury	-	13.2144	3.5865	0.7261	
Molybdenum	-	-	-	-	-
Nickel	-	1537.2822	2069.7079	15193.5834	
Selenium	-	41.3383	-	-	
Silver	-	-	6.3842	-	
Zinc	-	2098.4719	314.1141	-	
Ammonia	-	-	-	-	-
BOD	-	-	-	-	-
TSS	-	-	-	-	-
Beryllium	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-

Allowable Headworks (NPDES) from Table 3, column F.
Allowable Headworks (CHRONIC) from Table 4, column G.
Allowable Headworks (ACUTE) from Table 5, column G.
Allowable Headworks (HUMAN HEALTH) from Table 6, column H.
Allowable Headworks (WATER QUALITY) is lowest value from columns B through E.

POTW Name:

Local Limits

TABLE 8 - Local Limits Determination Based on Activated Sludge Inhibition Level

	LOCAL LIMITS CALCULATIONS DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	Activated Sludge Inhibition Level (mg/l) (Ccrit)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rprim)	Allowabl Headwor (lbs/day (Lhw)
Arsenic	6.001	0.1			-
Cadmium	6.001	1	Default (Through Primary)	15.00	
Chromium	6.001	1	Default (Through Primary)	27.00	
Copper	6.001	1	Default (Through Primary)	22.00	
Cyanide	6.001	0.1	Default (Through Primary)	27.00	
Lead	6.001	1	Default (Through Primary)	57.00	
Mercury	6.001	0.1	Default (Through Primary)	10.00	
Molybdenum	6.001	-			-
Nickel	6.001	1	Default (Through Primary)	14.00	
Selenium	6.001	-			-
Silver	6.001	0.25	Default (Through Primary)	20.00	
Zinc	6.001	0.3	Default (Through Primary)	27.00	
Ammonia	6.001	480			-
BOD	6.001				-
TSS	6.001				-
Beryllium	6.001	-			-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Ccrit)	Activated sludge threshold inhibition level, mg/l (EPA default or user entered).
(Rprim)	Removal efficiency prior to activated sludge treatment unit as percent (EPA default or user entered).
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	8.34 * (Ccrit * Qpotw) / (1-Rprim/100)
8.34	Unit conversion factor

POTW Name:

TABLE 9 - Local Limits Determination Based on Trickling Filter Inhibition Level

	LOCAL LIMITS CALCULATIONS DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	Trickling Filter Inhibition Level (mg/l) (Ccrit)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rprim)	Allowabl Headwor (lbs/day (Lhw)
Arsenic	6.001	-	Default (Through Act. Sludge)	-	-
Cadmium	6.001	-	Default (Through Primary)	-	-
Chromium	6.001	-	Default (Through Primary)	-	-
Copper	6.001	-	Default (Through Primary)	-	-
Cyanide	6.001	-	Default (Through Primary)	-	-
Lead	6.001	-	Default (Through Primary)	-	-
Mercury	6.001	-	Default (Through Primary)	-	-
Molybdenum	6.001	-			-
Nickel	6.001	-	Default (Through Primary)	-	-
Selenium	6.001	-	Default (Through Act. Sludge)	-	-
Silver	6.001	-	Default (Through Primary)	-	-
Zinc	6.001	-	Default (Through Primary)	-	-
Ammonia	6.001	-			-
BOD	6.001				-
TSS	6.001				-
Beryllium	6.001	-			-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Ccrit)	Trickling filter threshold inhibition level, mg/l (EPA default or user entered).
(Rprim)	Removal efficiency prior to trickling filter treatment unit as percent (user entered).
(Lhw)	Allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	8.34 * (Ccrit * Qpotw) / (1-Rprim/100)
8.34	Unit conversion factor

POTW Name:

TABLE 10 - Local Limits Determination Based on Nitrification Inhibition Level

	LOCAL LIMITS CALCULATIONS DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	Nitrification Inhibition Level (mg/l) (Ccrit)	Select Removal Efficiency (from list)	Removal Efficiency (%) (Rsec)	Allowabl Headworl (lbs/day (Lhw)
Arsenic	6.001	-	Default (Through Act. Sludge)	-	-
Cadmium	6.001	-	Default (Through Primary)	-	-
Chromium	6.001	-	Default (Through Primary)	-	-
Copper	6.001	-	Default (Through Primary)	-	-
Cyanide	6.001	-	Default (Through Primary)	-	-
Lead	6.001	-	Default (Through Primary)	-	-
Mercury	6.001	-	Default (Through Primary)	-	-
Molybdenum	6.001	-			-
Nickel	6.001	-	Default (Through Primary)	-	-
Selenium	6.001	-	Default (Through Act. Sludge)	-	-
Silver	6.001	-	Default (Through Primary)	-	-
Zinc	6.001	-	Default (Through Primary)	-	-
Ammonia	6.001	-			-
BOD	6.001				-
TSS	6.001				-
Beryllium	6.001	-			-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-
	6.001				-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Ccrit)	Nitrification threshold inhibition level, mg/l (EPA default or user entered).
(Rsec)	Removal efficiency prior to nitrification treatment unit as percent (user entered).
(Lhw)	Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	(8.34 * Ccrit * Qpotw) / (1-Rsec/100)
8.34	Unit conversion factor

POTW Name:

TABLE 11 - Local Limits Determination Based on Anaerobic Digester Inhibition Level (Conservative Pollutants)

	LOCAL LIMITS CALCULATIONS DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	Sludge Flow to Digester (MGD) (Qdig)	Anaerobic Digester Inhibition Level (mg/l) (Ccrit)	Removal Efficiency (%) (Rpotw)	Allowable Headwork (lbs/day) (Lhw)
Arsenic	6.001	0.037	1.6	5.06	
Cadmium	6.001	0.037	20	15.50	
Chromium	6.001	0.037	130	67.19	
Copper	6.001	0.037	40	74.97	
Cyanide					-
Lead	6.001	0.037	340	70.17	
Mercury	6.001	0.037	-	44.87	-
Molybdenum	6.001	0.037	-	17.00	-
Nickel	6.001	0.037	10	67.86	
Selenium	6.001	0.037	-	3.17	-
Silver	6.001	0.037	13	0.00	-
Zinc	6.001	0.037	400	45.90	
Ammonia					-
BOD					-
TSS					-
Beryllium	6.001	0.037	-	-	-
	6.001	0.037		85.53	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-
	6.001	0.037		-	-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Qdig)	Average sludge flow to digester in MGD (from Table 2(b), cell D36).
(Ccrit)	Anaerobic digester threshold inhibition level in mg/l (EPA default or user entered).
(Rpotw)	Removal efficiency across POTW as percent (from Table 3, column E).
(Lhw)	Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	(8.34 * Ccrit * Qdig) / (Rpotw/100)
8.34	Unit conversion factor

POTW Name:

Local Limi

TABLE 12 - Local Limits Determination Based on Anaerobic Digester Inhibition Level (Non-Conservative Pollutants)

	LOCAL LIMITS CALCULATIONS DATA				
Pollutant	POTW Flow (MGD) (Qpotw)	Average Influent Concentration (mg/l) (Cinf)	Average Influent Load (lbs/day) (Linf)	Digester Pollutant Concentration (mg/l) (Cdig)	Anaerobic I Inhibition (mg/ (Ccri
Cyanide	6.001	0.00	0.1992	0.25	
Ammonia	6.001	10.56	528.5939		
BOD	6.001	88.480	4428.2771		
TSS	6.001	108.696	5440.0544		
	6.001	17.277	864.6813		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		
	6.001	-	-		

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Cinf)	POTW's average influent concentration in mg/l (from 'Monitoring data' sheet, row 43 or user entered).
(Linf)	POTW's average influent loading in pounds per day (lbs/day - calculated).
Linf =	8.34 * Cinf * Qpotw
8.34	Unit conversion factor
(Cdig)	Average pollutant concentration in sludge sent to the digester in mg/l (user entered).
(Ccrit)	Anaerobic digester threshold inhibition level in mg/l (EPA default or user entered).
(Lhw)	Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	Linf * (Ccrit/Cdig)

POTW Name:

Local Limits Calculation

TABLE 13 - Comparison of Inhibition Allowable Headworks Loadings

Pollutant	Allowable Headworks (ACT. SLUDGE) (lbs/day)	Allowable Headworks (TRICK. FILTER) (lbs/day)	Allowable Headworks (NITRIF) (lbs/day)	Allowable Headworks (DIG. - CONSERV.) (lbs/day)	Allowable Headworks (DIG. - NON-CONS.) (lbs/day)	Most Stringent (INHIBITION) (lbs/day)	Maximum Influent Concentration (Cmaxin - mg/l)	Maximum Influent Loading (Lmaxin - lbs/d)
Arsenic	-	-	-	9.7525	-	9.7525	0.005	0.2502
Cadmium	58.8804	-	-	39.8202	-	39.8202	0.0025	0.1251
Chromium	68.5594	-	-	59.7077	-	59.7077	0.02	1.0010
Copper	64.1645	-	-	16.4645	-	16.4645	0.098	4.9047
Cyanide	6.8559	-	-	-	0.7969	0.7969	0.006	0.3003
Lead	116.3915	-	-	149.5249	-	116.3915	0.017	0.8508
Mercury	5.5609	-	-	-	-	5.5609	0.0001	0.0050
Molybdenum	-	-	-	-	-	-	0.00506	0.2532
Nickel	58.1957	-	-	4.5473	-	4.5473	0.104	5.2050
Selenium	-	-	-	-	-	-	0.015	0.7507
Silver	15.6401	-	-	-	-	15.6401	0.0025	0.1251
Zinc	20.5678	-	-	268.8930	-	20.5678	0.613	30.6796
Ammonia	-	-	-	-	-	-	15.42	771.7454
BOD	-	-	-	-	-	-	154.3	7722.4589
TSS	-	-	-	-	-	-	182	9108.7979
Beryllium	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	32.8	1641.5856
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

Allowable Headworks (ACT. SLUDGE) from Table 8, column E.
Allowable Headworks (TRICK. FILTER) from Table 9, column E.
Allowable Headworks (NITRIF.) from Table 10, column E.
Allowable Headworks (DIG. - CONSERV.) from Table 11 column F.
Allowable Headworks (DIG. - NON_CONS.) from Table 12, column G.
Most Stringent (INHIBITION) is lowest value from columns B through F.
(Cmaxin) Maximum Influent Concentration (from 'Monitoring Data' sheet, row 44).
(Lmaxin) Maximum Influent Loading (calculated).
Lmaxin = 8.34 * Cmaxin * Qpotw
8.34 Unit conversion factor
(Qpotw) POTW's average flow in MGD (from Table 2(b), cell B36).
Allowable Headworks (INHIBITION) is highest value from column G or I.
Red Bold indicates that the allowable headworks loading is based on the maximum influent loading.

POTW Name:

TABLE 14 - Local Limits Determination Based on Land Application Sludge Disposal

	LOCAL LIMITS CALCULATIONS DATA				MAXIMU LOADIN
Pollutant	POTW Flow (MGD) (Qpotw)	Sludge Flow to Disposal (MTD) (Qsldg)	Land Application Standard (mg/kg) (Cslcrit)	Removal Efficiency (%) (Rpotw)	Allowable Headwork (lbs/day) (Lhw)
Arsenic	6.001	1	41	5.06	
Cadmium	6.001	1	39	15.50	
Chromium	6.001	1		67.19	-
Copper	6.001	1	1500	74.97	
Cyanide	6.001	1		69.00	-
Lead	6.001	1	300	70.17	
Mercury	6.001	1	17	44.87	
Molybdenum	6.001	1	75	17.00	
Nickel	6.001	1	420	67.86	
Selenium	6.001	1	100	3.17	
Silver	6.001	1		0.00	-
Zinc	6.001	1	2800	45.90	
Ammonia	6.001	1		90.14	-
BOD	6.001	1		-	-
TSS	6.001	1		-	-
Beryllium	6.001	1		-	-
	6.001	1		85.53	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-
	6.001	1		-	-

(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(Qsldg)	Average sludge flow to disposal in dry metric tons per day (from Table 2(b), cell E36).
(Cslcrit)	Applicable sludge standard in mg/kg dry sludge (exceptional quality standard for land application or user entered).
(Rpotw)	Removal efficiency across POTW as a percent (from Table 3, column E).
(Lhw)	Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw =	(0.0022 * Cslcrit * Qsldg) / (Rpotw/100)
0.0022	Unit conversion factor

POTW Name:

Local Limits Calculation

TABLE 15 - Local Limits Determination Based on Incineration Sludge Disposal

Pollutant	LOCAL LIMITS CALCULATIONS DATA							
	Sludge Flow to Incineration (MTD) (Qinc)	Incinerator Dispersion Factor (ug/m³/g/sec) (DF)	Incinerator Control Efficiency (%) (CE)	Risk Specific Concentration (ug/m³) (RSC)	National Ambient Air Quality Standard (ug/m³) (NAAQS)	National Emission Standard (g/d) (NESHAP)	POTW Flow (MGD) (Qpotw)	Sludge Flow to Disposal (MTD) (Qsldg)
Arsenic	-	-		-	-	-	6.001	1
Cadmium	-	-		-	-	-	6.001	1
Chromium	-	-			-	-	6.001	1
Copper	-	-	-	-	-	-	6.001	1
Cyanide	-	-	-	-	-	-	6.001	1
Lead	-	-		-	-	-	6.001	1
Mercury	-	-		-	-	-	6.001	1
Molybdenum	-	-	-	-	-	-	6.001	1
Nickel	-	-		-	-	-	6.001	1
Selenium	-	-	-	-	-	-	6.001	1
Silver	-	-	-	-	-	-	6.001	1
Zinc	-	-	-	-	-	-	6.001	1
Ammonia	-	-	-	-	-	-	6.001	1
BOD	-	-	-	-	-	-	6.001	1
TSS	-	-	-	-	-	-	6.001	1
Beryllium	-	-		-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1
	-	-	-	-	-	-	6.001	1

(Qinc) Average sludge flow to incinerator in dry metric tons per day (from Table 2(b), cell M36).
(DF) Incinerator dispersion factor in ug/m³/g/sec (from Table 2(b), cell L36).
(CE) Incinerator control efficiency for the pollutant as a percent (user entered).
(RSC) Risk specific concentration limit in ug/m³ (from 40 CFR 503.43(d) - Table 1 for arsenic, cadmium, and nickel; Table 2 for chromium; chromium user entered).
(NAAQS) National ambient air quality standard in ug/m³ (from 40 CFR 50.12).
(NESHAP) National emission standard in g/d (from 40 CFR 61.52(b) for mercury and 40 CFR 61.32(a) for beryllium).
(Qpotw) POTW's average flow in MGD (from Table 2(b), cell B36).
(Qsldg) Average sludge flow to disposal in dry metric tons per day (from Table 2(b), cell E36).
(Cslcrit) Applicable sludge standard in mg/kg dry sludge (calculated based on RSC, NAAQS, or NESHAP - see individual cells for formulas or Appendix T of EPA local limits guidance manual).
86400 Unit conversion factor
(Rpotw) Removal efficiency across POTW as a percent (from Table 3, column E).
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day - calculated).
Lhw = (0.0022 * Cslcrit * Qsldg) / (Rpotw/100)
0.0022 Unit conversion factor

POTW Name:

Local Limi

TABLE 16 - Comparison of Sludge Allowable Headworks Loadings

Pollutant	Allowable Headworks (LAND APPL.) (lbs/day)	Allowable Headworks (INCINERATION) (lbs/day)	Allowable Headworks (SLUDGE) (lbs/d)
Arsenic	1.7817	-	1.7817
Cadmium	0.5536	-	0.5536
Chromium	-	-	-
Copper	4.4019	-	4.4019
Cyanide	-	-	-
Lead	0.9406	-	0.9406
Mercury	0.0833	-	0.0833
Molybdenum	0.9707	-	0.9707
Nickel	1.3616	-	1.3616
Selenium	6.9348	-	6.9348
Silver	-	-	-
Zinc	13.4194	-	13.4194
Ammonia	-	-	-
BOD	-	-	-
TSS	-	-	-
Beryllium	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

Allowable Headworks (LAND APPL.) from Table 14, column F.
Allowable Headworks (INCINERATION) from Table 15, column L.
Allowable Headworks (SLUDGE) is lowest value from column B and C.

POTW Name:

Local Limit

TABLE 17 - Comparison of Allowable Headworks Loadings

Pollutant	Allowable Headworks (WATER QUALITY) (lbs/day)	Allowable Headworks (INHIBITION) (lbs/d)	Allowable Headworks (SLUDGE) (lbs/d)	Design Loading (lbs/d)	Maxim Allowa Headwo (MAHL -
Arsenic	84.3226	9.7525	1.7817	-	
Cadmium	2.9707	39.8202	0.5536	-	
Chromium	-	59.7077	-	-	
Copper	80.8250	16.4645	4.4019	-	
Cyanide	85.0406	0.7969	-	-	
Lead	109.9679	116.3915	0.9406	-	
Mercury	0.7261	5.5609	0.0833	-	
Molybdenum	-	-	0.9707	-	
Nickel	~~527.2024~~	5.2050	~~1.3616~~	-	
Selenium	~~41.3383~~	-	~~6.9348~~	-	
Silver	~~8.3842~~	15.8401	-	-	
Zinc	~~314.1141~~	~~30.6796~~	13.4194	-	
Ammonia	-	-	-	-	-
BOD	-	-	-	8500	
TSS	-	-	-	8500	
Beryllium	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-

Allowable Headworks (WATER QUALITY) from Table 7, column F.
Allowable Headworks (INHIBITION) from Table 13, column J.
Allowable Headworks (SLUDGE) from Table 16, column D.
Design Loading of POTW treatment plant (user entered).
Maximum allowable headworks loading (MAHL) is lowest value from columns B through E.

POTW Name:

Local Limits Calculation

TABLE 18 - Calculation of Local Limit

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Safety Factor (%) (SF)	Growth Allowance (%) (GA)	Nonindustrial Concentration (mg/l) (Cdom)	Nonindustrial Flow (MGD) (Qdom)	Nonindustrial Loading (lbs/day) (Ldom)	Hauled Waste Concentration (mg/l) (Chw)	Hauled Waste Flow (MGD) (Qhw)
Arsenic	1.7817			0.0025	5.415	0.1129	-	0
Cadmium	0.5536			0.0003	5.415	0.0135	-	0
Chromium	59.7077			0.0019	5.415	0.0863	-	0
Copper	4.4019			0.0223	5.415	1.0086	-	0
Cyanide	0.7969			0.0050	5.415	0.2258	-	0
Lead	0.9406			0.0025	5.415	0.1129	-	0
Mercury	0.0833			0.0001	5.415	0.0045	-	0
Molybdenum	0.9707			0.0025	5.415	0.1129	-	0
Nickel	1.3616	-		0.0064	5.415	0.2873	-	0
Selenium	6.9348			0.0060	5.415	0.2710	-	0
Silver	6.3842			0.0003	5.415	0.0113	-	0
Zinc	13.4194			0.0817	5.415	3.6882	-	0
Ammonia	-			-	5.415	0.0000	-	0
BOD	8500.0000			43.3333	5.415	1956.9810	-	0
TSS	8500.0000			37.0000	5.415	1670.9607	-	0
Beryllium	-			-	5.415	0.0000	-	0
	-			13.7167	5.415	619.4598	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0
	-			-	5.415	0.0000	-	0

(MAHL) Maximum allowable headworks loading (from Table 17, column F).
(SF) Safety factor as a percent (user entered).
(GA) Growth allowance as a percent (user entered).
(Cdom) Average domestic/commercial background concentration for a particular pollutant in mg/l (from 'Monitoring Data sheet row 43 or user entered).
(Qdom) Average domestic/commercial background flow in MGD (calculated).
Qdom = Qpotw - Qind - Qhw (values from Table 2(b), cells B36, C36, and K36)
(Ldom) Average domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (calculated).
Ldom = 8.34 * Cdom * Qdom
8.34 Unit conversion factor
(Chw) Average hauled waste concentration for a particular pollutant in mg/l (from "Monitoring Data" sheet, row 43 or user entered).
(Qhw) Average hauled waste flow in MGD (from Table 2(b), cell K36).
(Lhw) Average hauled waste loading to the POTW for a particular pollutant in pounds per day (calculated).
Lhw = 8.34 * Chw * Qhw
(MAIL) Maximum Allowable Industrial Load (calculated).
MAIL = MAHL * (1 - SF) - Ldom - Lhw
(Cind) Industrial allowable local limit for a given pollutant in mg/l (calculated).
Cind = MAIL/(8.34 * Qind)
Basis of Limitation is an identification of the lowest allowable headworks loading from Table 17.
Existing Local Limit from Table 3, column B.
Red Bold indicates a safety factor or growth allowance of less than 10%.

POTW Name:

Local Limits Calculation

Table 19 - Comparison of Existing and Calculated Local Limits

POTW Adopting MAIL	POTW Adopting Uniform Concentration
	X

Pollutant	Existing Allowable Industrial Loading (lbs/d) (MAILex)	Calculated Allowable Industrial Loading (lbs/d) (MAIL)	Calculated Uniform Concentration Limit (mg/l) (Cind)	Existing Local Limit (mg/l) (Cind-ex)	Proposed Local Limit (mg/l)	Other Issues?	Basis of "Need Limit?"	
							Existing Limit	Avg Inf Loading
Arsenic	0.2566	1.6688	0.34	0.11		Need Limit?	X	
Cadmium	0.1639	0.5400	0.11	0.2		Need Limit?	X	
Chromium	71.3127	59.6214	12.20	13.1		Need Limit?	X	
Copper	5.7942	3.3933	0.69	1.4		Need Limit?	X	
Cyanide	4.7596	0.5711	0.12	0.17		Need Limit?	X	
Lead	1.0315	0.8277	0.17	2.31		Need Limit?	X	
Mercury	0.0798	0.0788	0.016	0.019		Need Limit?	X	
Molybdenum	0.5184	0.8578	0.18					
Nickel	2.6638	1.0743	0.22	0.72		Need Limit?	X	X
Selenium	0.5632	6.6638	1.36	14.1		Need Limit?	X	
Silver	3.5898	6.3729	1.30	0.56		Need Limit?	X	
Zinc	14.7655	9.7312	1.99	2.77		Need Limit?	X	X
Ammonia	46811.4612	-	-					
BOD	11317.0174	6543.0190	1339	729		Need Limit?	X	
TSS		6829.0393	1397	771		Need Limit?	X	
Beryllium		-	-					
Oil and Grease	10000000	-	-	500		Need Limit?	X	
		-	-					
		-	-					
		-	-					
		-	-					
		-	-					
		-	-					
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		-	-					

(MAILex) = Existing Maximum Allowable Industrial Load (user entered).
(MAIL) = Maximum Allowable Industrial Load (from Table 18, column K).
(Cind-ex) = Existing local limit for a given pollutant in mg/l (user entered).
(Cind) = Newly calculated local limit for a given pollutant in mg/l (from Table 18, column L).

Brown bold indicates that the calculated allowable industrial loading or local limit is less stringent than the existing loading or limit.
Green bold indicates that the calculated allowable industrial loading or local limit is new or more stringent than the existing loading or limit.
Red bold indicates that the proposed local limit is less stringent than the calculated limit.
Basis of "Need Limit?": "X" in "Existing Limit" column indicates that a local limit exists but no limit was proposed.
Basis of "Need Limit?": "X" in "Avg Inf Loading" column indicates that the average influent loading is greater than 60% of the MAHL.
Basis of "Need Limit?": "X" in "Max Inf Loading" column indicates that the maximum influent loading is greater than 80% of the MAHL.

POTW Name:

Local Limit

TABLE 20 - Comparison of Allowable Headworks Loadings And Current Influent Loadings

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Average Influent Loading (lbs/day)	Average Percent Loaded (%)	Maximum Influent Loading (lbs/d)	Maximum Percent Loaded (%)
Arsenic	1.7817	0.2502	14.0451	0.2502	
Cadmium	0.5536	0.1251	22.6015	0.1251	
Chromium	59.7077	0.5596	0.9373	1.0010	
Copper	4.4019	2.4183	54.9391	4.9047	
Cyanide	0.7969	0.1992	25.0000	0.3003	
Lead	0.9406	0.4194	44.5885	0.8508	
Mercury	0.0833	0.0050	6.0047	0.0050	
Molybdenum	0.9707	0.1507	15.5302	0.2532	
Nickel	1.3616	2.0777	152.5902	5.2050	
Selenium	6.9348	0.2688	3.8758	0.7507	
Silver	6.3842	0.1251	1.9599	0.1251	
Zinc	13.4194	12.6873	94.5443	30.6796	
Ammonia	-	528.5939	-	771.7454	-
BOD	8500.0000	4428.2771	52.0974	7722.4589	
TSS	8500.0000	5440.0544	64.0006	9108.7979	
Beryllium	-	-	-	-	-
	-	864.6813	-	1641.5856	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-

(MAHL) Maximum Allowable Headworks Loading (from Table 17).
Average Influent Loading from 'Monitoring Data' sheet row 46.
Average Percent Loaded = (Average Influent Loading)/(Maximum Allowable Headworks Loading)*100
Maximum Influent Loading is the Maximum Influent Concentration from 'Monitoring Data' sheet row 44 converted to a loading using the POTW flow from Table 2(b).
Maximum Percent Loaded = (Maximum Influent Loading)/(Maximum Allowable Headworks Loading)*100
Green bold indicates that the average percent loaded is greater than 60% or the maximum percent loaded is greater than 80%.
Red bold indicates that the percent loaded is greater than 100%.

POTW Name:

Local Limits Calculation

TABLE 21 - Calculation of Influent, Effluent, and Sludge Goals

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	POTW Flow (MGD) (Qpotw)	Influent Goal (mg/l) (MAHC)	Allowable Headworks (WATER QUALITY) (AHLwq - lbs/day)	Removal Efficiency (%) (Rpotw)	Effluent Goal (mg/l)	Allowable Headworks (SLUDGE) (AHLs - lbs/day)	Sludge Flow to Disposal (MTD) (Qsldg)
Arsenic	1.7817	6.001	0.0356	84.3226	5.06	1.5995	1.7817	1
Cadmium	0.5536	6.001	0.0111	2.9707	15.50	0.0502	0.5536	1
Chromium	59.7077	6.001	1.1930	-	67.19	-	-	1
Copper	4.4019	6.001	0.0880	80.8250	74.97	0.4042	4.4019	1
Cyanide	0.7969	6.001	0.0159	85.0406	69.00	0.5267	-	1
Lead	0.9406	6.001	0.0188	109.9679	70.17	0.6555	0.9406	1
Mercury	0.0833	6.001	0.0017	0.7261	44.87	0.0080	0.0833	1
Molybdenum	0.9707	6.001	0.0194	-	17.00	-	0.9707	1
Nickel	1.3616	6.001	0.0272	1537.2822	67.86	9.8722	1.3616	1
Selenium	6.9348	6.001	0.1386	41.3383	3.17	0.7998	6.9348	1
Silver	6.3842	6.001	0.1276	6.3842	0.00	0.1276	-	1
Zinc	13.4194	6.001	0.2681	314.1141	45.90	3.3952	13.4194	1
Ammonia	-	6.001	-	-	90.14	-	-	1
BOD	8500.0000	6.001	169.8358	-	-	-	-	1
TSS	8500.0000	6.001	169.8358	-	-	-	-	1
Beryllium	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	85.53	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1
	-	6.001	-	-	-	-	-	1

(MAHL)	Maximum allowable headworks loading (from Table 18).
(Qpotw)	POTW's average flow in MGD (from Table 2(b), cell B36).
(MAHC)	Influent concentration necessary to meet effluent, sludge, and inhibition goals (calculated).
MAHC =	MAHL/(Qpotw * 8.34)
8.34	Unit conversion factor
(AHLwq)	Allowable Headworks (WATER QUALITY) from Table 7, column F.
(Rpotw)	Removal efficiency across POTW as percent (from Table 3, column F).
(Effluent Goal)	Discharge concentration necessary to meet NPDES limit or water quality standards (calculated)
Effluent Goal =	(AHLwq) * (1-Rpotw/100)/(8.34 * Qpotw)
(AHLs)	Allowable Headworks (SLUDGE) from Table 16, column D.
(Qsldg)	Average sludge flow to disposal in dry metric tons per day (from Table 2(b), cell E36).
(Sludge Goal)	Sludge standard used in headworks calculations for sludge protection (calculated)
Sludge Goal =	AHLs * (Rpotw/100) / (0.0022 * Qsldg)

Table 22 - Comparison of Influent, Effluent, and Sludge Goals to Monitoring Data

Pollutant	Influent Goal (mg/l) (MAHC)	Number of Influent Measurements	Number of Influent Exceedances	Influent Evaluation	Effluent Goal (mg/l)	Number of Effluent Measurements	Number of Effluent Exceedances	Effluent Evaluation
Arsenic	0.0356	23	0	OK	1.5995	23	0	OK
Cadmium	0.0111	21	0	OK	0.0502	23	0	OK
Chromium	1.1930	22	0	OK	-	24	0	-
Copper	0.0880	25	3	?	0.4042	21	0	OK
Cyanide	0.0159	26	0	OK	0.5267	23	0	OK
Lead	0.0188	25	0	OK	0.6555	22	0	OK
Mercury	0.0017	23	0	OK	0.0080	27	0	OK
Molybdenum	0.0194	5	0	OK	-	5	0	-
Nickel	0.0272	28	16	!!!!	9.8722	28	0	OK
Selenium	0.1386	27	0	OK	0.7998	25	0	OK
Silver	0.1276	22	0	OK	0.1276	27	0	OK
Zinc	0.2681	28	10	!!	3.3952	28	0	OK
Ammonia	-	18	0	-	-	18	0	-
BOD	169.8358	25	0	OK	-	24	0	-
TSS	169.8358	25	1	?	-	22	0	-
Beryllium	-	0	0	-	-	0	0	-
	-	26	0	-	-	23	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-
	-	0	0	-	-	0	0	-

Evaluation = OK means that all of the monitoring data is below the goal.
Evaluation = ? means that 25% or less of all of the monitoring data is above the goal.
Evaluation = !! means that between 25% and 50% of all of the monitoring data is above the goal.
Evaluation = !!!! means that between 50% and 75% of all of the monitoring data is above the goal.
Evaluation = !!!!!! means that more than 75% of all of the monitoring data is above the goal.
Evaluation = "-" means that there is no goal or no monitoring data was used in the evaluation.

(Influent Goal)	Influent concentration necessary to meet effluent, sludge, and inhibition goals (from Table 20).
(Effluent Goal)	Discharge concentration necessary to meet NPDES limit or water quality standards (from Table 20).
(Sludge Goal)	Sludge concentration necessary to meet sludge disposal goals (from Table 20).

Number of Measurements (columns C, G, and K) from 'Monitoring Data' sheet row 42.
Number of Exceedances (columns D, H, and L) is the number of sample results in 'Monitoring Data' sheet (rows 2 through 41) that exceed the listed goal.

TABLE 20 - Comparison of Allowable Headworks Loadings And Current Influent Loadings

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Average Influent Loading (lbs/day)	Average Percent Loaded (%)	Maximum Influent Loading (lbs/d)	Maximum Percent Loaded (%)
Arsenic	1.7817	0.2502	14.0451	0.2502	14.0451
Cadmium	0.5536	0.1251	22.6015	0.1251	22.6015
Chromium	59.7077	0.5596	0.9373	1.0010	1.6764
Copper	4.4019	2.4183	54.9391	4.9047	**111.4244**
Cyanide	0.7969	0.1992	25.0000	0.3003	37.6812
Lead	0.9406	0.4194	44.5885	0.8508	**90.4540**
Mercury	0.0833	0.0050	6.0047	0.0050	6.0047
Molybdenum	0.3300	0.1507	45.6805	0.2532	76.7408
Nickel	1.1459	1.7485	**152.5902**	3.7536	**327.5781**
Selenium	0.4400	0.2607	59.2428	0.3003	68.2477
Silver	6.8659	0.1251	1.8224	0.1251	1.8224
Zinc	9.9425	12.0209	**120.9043**	25.1243	**252.6964**
Ammonia	-	528.5939	-	771.7454	-
BOD	8500.0000	4428.2771	52.0974	7722.4589	**90.8525**
TSS	8500.0000	5440.0544	64.0006	9108.7979	**107.1623**
Beryllium	-	-	-	-	-
Oil/Grease	-	864.6813	-	1641.5856	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-

(MAHL) Maximum Allowable Headworks Loading (from Table 17).
Average Influent Loading from 'Monitoring Data' sheet row 46.
Average Percent Loaded = (Average Influent Loading)/(Maximum Allowable Headworks Loading)*100
Maximum Influent Loading is the Maximum Influent Concentration from 'Monitoring Data' sheet row 44 converted to a loading using the POTW flow from Table 2(b), cell B36.
Maximum Percent Loaded = (Maximum Influent Loading)/(Maximum Allowable Headworks Loading)*100
Green bold indicates that the average percent loaded is greater than 60% or the maximum percent loaded is greater than 80%.
Red bold indicates that the percent loaded is greater than 100%.

Local Limits Calculation

nd Calculated Local Limits

POTW Adopting MAIL	POTW Adopting Uniform Concentration
	x

ed Allowable ial Loading bs/d) MAIL)	Calculated Uniform Concentration Limit (mg/l) (Cind)	Existing Local Limit (mg/l) (Cind-ex)	Proposed Local Limit (mg/l)	Other Issues?	Basis of "Need Limit?" Existing Limit	Avg Inf Loading	Max Inf Loading
1.6688	0.34	0.11		Need Limit?	X		
0.5400	0.11	0.2		Need Limit?	X		
59.6214	12.20	13.1		Need Limit?	X		
3.3933	0.69	1.4		Need Limit?	X		X
0.5711	0.12	0.17		Need Limit?	X		
0.8277	0.17	2.31		Need Limit?	X		X
0.0788	0.016	0.019		Need Limit?	X		
0.2171	0.04						
0.9149	0.19	0.72		Need Limit?	X	X	X
0.1690	0.03	14.1		Need Limit?	X		
6.8546	1.40	0.56		Need Limit?	X		
6.2543	1.28	2.77		Need Limit?	X	X	X
	-						
6543.0190	1339	729		Need Limit?	X		
6829.0393	1397	771		Need Limit?	X		X
	-						
	-	500		Need Limit?	X		
	-						
	-						
	-						
	-						
	-						
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	-						
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	-						
	-						
	-						
	-						
	-						
	-						
	-						

.oad (user entered).
n Table 18, column K).
l mg/l (user entered).
ollutant in mg/l (from Table 18, column L).
d allowable industrial loading or local limit is less stringent than the existing loading or limit.
l allowable industrial loading or local limit is new or more stringent than the existing loading or limit.
cal limit is less stringent than the calculated limit.
imit" column indicates that a local limit exists but no limit was proposed.
eading" column indicates that the average influent loading is greater than 60% of the MAHL.
oading" column indicates that the maximum influent loading is greater than 80% of the MAHL.

POTW Name:

Local Limits Calculation

TABLE 18 - Calculation of Local Limit

Pollutant	Maximum Allowable Headworks (MAHL - lbs/d)	Safety Factor (%) (SF)	Growth Allowance (%) (GA)	Nonindustrial Concentration (mg/l) (Cdom)	Nonindustrial Flow (MGD) (Qdom)	Nonindustrial Loading (lbs/day) (Ldom)	Hauled Waste Concentration (mg/l) (Chw)	Hauled Waste Flow (MGD) (Qhw)	Hauled Waste Loading (lbs/day) (Lhw)	
Arsenic	1.7817			0.0025	5.415	0.1129	-	0	0.0000	
Cadmium	0.5536			0.0003	5.415	0.0135	-	0	0.0000	
Chromium	59.7077			0.0019	5.415	0.0863	-	0	0.0000	
Copper	4.4019			0.0223	5.415	1.0086	-	0	0.0000	
Cyanide	0.7969			0.0050	5.415	0.2258	-	0	0.0000	
Lead	0.9406			0.0025	5.415	0.1129	-	0	0.0000	
Mercury	0.0833			0.0001	5.415	0.0045	-	0	0.0000	
Molybdenum	0.3300			0.0025	5.415	0.1129	-	0	0.0000	
Nickel	1.1459			0.0051	5.415	0.2310	-	0	0.0000	
Selenium	0.4400			0.0060	5.415	0.2710	-	0	0.0000	
Silver	6.8659			0.0003	5.415	0.0113	-	0	0.0000	
Zinc	9.9425			0.0817	5.415	3.6882	-	0	0.0000	
Ammonia	-			-	5.415	0.0000	-	0	0.0000	-
BOD	8500.0000			43.3333	5.415	1956.9810	-	0	0.0000	
TSS	8500.0000			37.0000	5.415	1670.9607	-	0	0.0000	
Beryllium	-			-	5.415	0.0000	-	0	0.0000	-
Oil/Grease	-			13.7167	5.415	619.4598	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-
	-			-	5.415	0.0000	-	0	0.0000	-

(MAHL)	Maximum allowable headworks loading (from Table 17, column F).
(SF)	Safety factor as a percent (user entered).
(GA)	Growth allowance as a percent (user entered).
(Cdom)	Average domestic/commercial background concentration for a particular pollutant in mg/l (from 'Monitoring Data sheet row 43 or user entered).
(Qdom)	Average domestic/commercial background flow in MGD (calculated).
Qdom =	Qpotw - Qind - Qhw (values from Table 2(b), cells B36, C36, and K36)
(Ldom)	Average domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (calculated).
Ldom =	8.34 * Cdom * Qdom
8.34	Unit conversion factor
(Chw)	Average hauled waste concentration for a particular pollutant in mg/l (from "Monitoring Data" sheet, row 43 or user entered).
(Qhw)	Average hauled waste flow in MGD (from Table 2(b), cell K36).
(Lhw)	Average hauled waste loading to the POTW for a particular pollutant in pounds per day (calculated).
Lhw =	8.34 * Chw * Qhw
(MAIL)	Maximum Allowable Industrial Load (calculated).
MAIL =	MAHL * (1 - SF) - Ldom - Lhw
(Cind)	Industrial allowable local limit for a given pollutant in mg/l (calculated).
Cind =	MAIL/(8.34 * Qind)
	Basis of Limitation is an identification of the lowest allowable headworks loading from Table 17.
	Existing Local Limit from Table 3, column B.
	Red Bold indicates a safety factor or growth allowance of less than 10%.

Local Limits Calculation

Headworks Loadings

wable dworks BITION) bs/d)	Allowable Headworks (SLUDGE) (lbs/d)	Design Loading (lbs/d)	Maximum Allowable Headworks (MAHL - lbs/d)
9.7525	1.7817	-	1.7817
39.8202	0.5536	-	0.5536
59.7077	-	-	59.7077
16.4645	4.4019	-	4.4019
0.7969	-	-	0.7969
116.3915	0.9406	-	0.9406
5.5609	0.0833	-	0.0833
	0.3300	-	0.3300
3.8268	1.1459	-	1.1459
	0.4400	-	0.4400
6.8659	-	-	6.8659
25.1243	9.9425	-	9.9425
	-	-	-
	-	8500	8500.0000
	-	8500	8500.0000
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

') from Table 7, column F.
Table 13, column J.
able 16, column D.
t (user entered).
MAHL) is lowest value from columns B through E.

POTW Name:

Local Limits Calculation

Table 22 - Comparison of Influent, Effluent, and Sludge Goals to Monitoring Data

Pollutant	Influent Goal (mg/l) (MAHC)	Number of Influent Measurements	Number of Influent Exceedances	Influent Evaluation	Effluent Goal (mg/l)	Number of Effluent Measurements	Number of Effluent Exceedances	Effluent Evaluation	Sludge Goal (mg/kg)
Arsenic	0.0356	23	0	OK	1.5995	23	0	OK	41
Cadmium	0.0111	21	0	OK	0.0502	23	0	OK	39
Chromium	1.1930	22	0	OK	-	24	0	-	-
Copper	0.0880	**25**	**3**	?	0.4042	21	0	OK	1500
Cyanide	0.0159	26	0	OK	0.5267	23	0	OK	-
Lead	0.0188	25	0	OK	0.6555	22	0	OK	300
Mercury	0.0017	23	0	OK	0.0080	27	0	OK	17
Molybdenum	0.0066	5	0	OK	-	5	0	-	75
Nickel	0.0229	**25**	**16**	!!!!	9.8722	26	0	OK	420
Selenium	0.0088	24	0	OK	0.7998	25	0	OK	100
Silver	0.1372	22	0	OK	0.1276	27	0	OK	-
Zinc	0.1987	**27**	**17**	!!!!	3.3952	24	0	OK	2800
Ammonia	-	18	0	-	-	18	0	-	-
BOD	169.8358	25	0	OK	-	24	0	-	-
TSS	169.8358	**25**	**1**	?	-	22	0	-	-
Beryllium	-	0	0	-	-	0	0	-	-
Oil/Grease	-	26	0	-	-	23	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-
	-	0	0	-	-	0	0	-	-

Evaluation = OK means that all of the monitoring data is below the goal.
Evaluation = ? means that 25% or less of all of the monitoring data is above the goal.
Evaluation = !! means that between 25% and 50% of all of the monitoring data is above the goal.
Evaluation = !!!! means that between 50% and 75% of all of the monitoring data is above the goal.
Evaluation = !!!!!! means that more than 75% of all of the monitoring data is above the goal.
Evaluation = "-" means that there is no goal or no monitoring data was used in the evaluation.

(Influent Goal)	Influent concentration necessary to meet effluent, sludge, and inhibition goals (from Table 20).
(Effluent Goal)	Discharge concentration necessary to meet NPDES limit or water quality standards (from Table 20).
(Sludge Goal)	Sludge concentration necessary to meet sludge disposal goals (from Table 20).

Number of Measurements (columns C, G, and K) from 'Monitoring Data' sheet row 42.
Number of Exceedances (columns D, H, and L) is the number of sample results in 'Monitoring Data' sheet (rows 2 through 41) that exceed the listed goal.

Local Limits Calculation

fluent, and Sludge Goals

TW ow GD) otw)	Influent Goal (mg/l) (MAHC)	Allowable Headworks (WATER QUALITY) (AHLwq - lbs/day)	Removal Efficiency (%) (Rpotw)	Effluent Goal (mg/l)	Allowable Headworks (SLUDGE) (AHLs - lbs/day)	Sludge Flow to Disposal (MTD) (Qsldg)	Sludge Goal (mg/kg)
6.001	0.0356	84.3226	5.06	1.5995	1.7817	1	41
6.001	0.0111	2.9707	15.50	0.0502	0.5536	1	39
6.001	1.1930	-	67.19	-	-	1	-
6.001	0.0880	80.8250	74.97	0.4042	4.4019	1	1500
6.001	0.0159	85.0406	69.00	0.5267	-	1	-
6.001	0.0188	109.9679	70.17	0.6555	0.9406	1	300
6.001	0.0017	0.7261	44.87	0.0080	0.0833	1	17
6.001	0.0066	-	50.00	-	0.3300	1	75
6.001	0.0229	2551.7499	80.64	9.8722	1.1459	1	420
6.001	0.0088	80.0537	50.00	0.7998	0.4400	1	100
6.001	0.1372	15.3565	58.43	0.1276	-	1	-
6.001	0.1987	446.6561	61.96	3.3952	9.9425	1	2800
6.001	-	-	90.14	-	-	1	-
6.001	169.8358	-	-	-	-	1	-
6.001	169.8358	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	85.53	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-
6.001	-	-	-	-	-	1	-

rom Table 18).
2(b), cell B36).
effluent, sludge, and inhibition goals (calculated).

from Table 7, column F.
ent (from Table 3, column F).
st NPDES limit or water quality standards (calculated)

ble 16, column D.
tric tons per day (from Table 2(b), cell E36).
ations for sludge protection (calculated)